EARTHQUAKE INSURANCE AND HAZARD MITIGATION

HEARING

BEFORE THE

SUBCOMMITTEE ON
SCIENCE, RESEARCH AND TECHNOLOGY

OF THE

COMMITTEE ON
SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

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CONTENTS

WITNESSES

	Page
July 26, 1990:	
Hon. Al Swift, (D-WA	6
Hon. Nancy Pelosi, (D-CA)	10
Hon. David Dreier, (R-CA)	18
Francis V. Reilly, Deputy Federal Insurance Administrator, FEMA; accompanied by Gary Johnson, Chief, FEMA, Earthquake and Natural Hazards Program Division; and Jim Taylor, Assistant Administrator for Insurance Support Services	30
Franklin W. Nutter, President, Alliance of American Insurers and Chairman, Earthquake Project, Schaumburg, Il.; accompanied by Billy R. Manning, P.E., Director, Engineering and Education, Southern Building Code Congress, Birmingham, AL	57
George K. Bernstein, Chairman, Expert Review Committee of the National Earthquake Hazards Reduction Program and former Federal Insurance Administrator, Washington, DC	76
Christopher Arnold, FAIA, Representing the American Institute of Architects, and President, BSD Building Systems Development, Inc., San Mateo, CA	105
James E. Beavers, Corporate Fellow, Martin Marietta Energy Systems, Inc., Oak Ridge, TN	122
Gerald H. Jones, P.E., Director, of Codes Administration, Kansas City, MO	143

APPENDIX

H.R. 4915, "Earthquake Hazards Reduction Amendments Act"	178
H.R. 4480, "Federal Earthquake Insurance and Reinsurance Act"	216
Additional information for the record provided by Franklin W. Nutter	244

EARTHQUAKE INSURANCE AND HAZARD MITIGATION

THURSDAY, JULY 26, 1990

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:00 a.m., in Room 2318, Rayburn House Office Building, Hon. Tim Valentine [chairman of the subcommittee] presiding.

Mr. VALENTINE. Today the Subcommittee on Science, Research and Technology will consider the need for the Federal insurance program. The hearing will focus on ways the Federal earthquake insurance could be used to encourage building owners to strengthen their properties to withstand earthquakes. Two competing approaches to earthquake insurance will be assessed to light of the hazard mitigation measures that they proposed. Witnesses have been asked to comment on H.R. 4915, introduced by Representatives George Brown, Jr., of California, and Mr. Roe, Chairman of the Science Committee from New Jersey, and the ranking Republican Member of this Subcommittee, Mr. Boehlert, from New York; H.R. 4480, introduced by Representatives Al Swift of Washington and David Dreier of California, both of whom are here, of course, with the distinguished Member from California, Ms. Pelosi.

Major earthquakes that have struck in Soviet Armenia, in Iran, in the Philippines, and closer to home. The recent California earthquake in the San Francisco Bay Area, remind us of the threat they pose to our human and economic resources. In fact, the U.S. Geological Survey last week released data that increases the odds to a chance of two to three that at least one major earthquake will occur in the San Francisco Bay region within the next 30 years. The earthquake threat is not a problem limited to California; 39 States and 200 million Americans are at risk from moderate to severe earthquakes.

The real threat is not from the earthquake, but from structures that cannot withstand earthquakes. Therefore, if a Federal insurance program is to be established, it makes sound fiscal sense to condition the program on effective hazard mitigation measures that will save lives and property, and reduce the amount of taxpayers' dollars that will be required for disaster relief after an earthquake.

We will be joined by Mr. Boehlert, Mr. Brown is already here, a distinguished Member of this committee, of course, from California,

and I welcome all of distinguished witnesses here today, in particular our colleagues, Representatives Nancy Pelosi, as I have said, and Al Swift and David Dreier to present their views on earthquake insurance and hazard mitigation.

I will recognize Mr. Brown at this time, if you have any opening statement?

Mr. BROWN. Mr. Chairman, I have a brief opening statement which I would ask you to include in the record, if there are no objections.

Mr. VALENTINE. Without objection.

Mr. BROWN. Let me just add to that by saying that I am very grateful for the initiative that you have shown in scheduling this hearing. You are carrying on in a tradition of concern for earthquake problems, including research and prediction, and mitigation that goes back more than 15 years in this subcommittee, and I think the value of the work that the subcommittee and the full committee has done, action which, of course, has been reflected in legislation over the years, has been of tremendous value to the Nation, and I hope the hearing we are having today and the legislation we will consider will add to that record on the part of the subcommittee and the committee, and will take us another step forward in dealing with this extremely important hazard, as you've indicated, a large majority of the people in the United States.

I'll conclude with that, Mr. Chairman.

[The prepared opening statements of Mr. Brown and Mr. Costello follow:]

OPENING STATEMENT OF CONGRESSMAN GEORGE E. BROWN, JR.
SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY
HEARING ON EARTHQUAKE MITIGATION AND INSURANCE

Mr. Chairman, in the past months we have witnessed a succession of tragic earthquakes, from the Loma Prieta earthquake near San Francisco, to the more recent quakes in Iran and the Philippines. Just last week the U.S. Geological Survey issued a revised forecast for northern California, concluding that there is nearly a seventy percent chance of a serious earthquake in that area during the next thirty years. For the nation as a whole, we can be virtually certain that one or more major, damaging earthquakes will strike during the next several decades.

Over the years, this subcommittee has demonstrated a keen and persistent interest in earthquake hazard reduction in the United States. Today, we will consider the problem of federal earthquake insurance and hazard mitigation. In particular, we will hear testimony contrasting two bills, H.R. 4480 and H.R. 4915, which would establish federal earthquake insurance programs. These bills differ markedly, especially in their approach to hazard mitigation.

I will leave the discussion of H.R. 4480 to the distinguished gentlemen from Washington and California--Mr. Swift and Mr. Dreier--who introduced that piece of legislation, and are more familiar with its virtues than I am. I would, however, like to say a few words about the

ALTERNATIVE, H.R. 4915, WHICH I INTRODUCED, ALONG WITH CHAIRMAN ROE AND THE DISTINGUISHED GENTLEMAN FROM NEW YORK, MR. BOEHLERT.

H.R. 4915 IS EXPLICITLY DESIGNED TO INCREASE EARTHQUAKE PREPAREDNESS IN THE UNITED STATES. IT WILL, I BELIEVE, SAVE LIVES, PROPERTY, AND TAXPAYER DOLLARS. IT INCLUDES STRONG INCENTIVES FOR EARTHQUAKE-PRONE REGIONS TO ADOPT MEANINGFUL MITIGATION PROGRAMS AT THE STATE AND LOCAL LEVEL. AT THE SAME TIME, OUR MITIGATION PLAN IS INTENDED TO GIVE CONSIDERABLE FLEXIBILITY TO LOCAL OFFICIALS SUCH AS BUILDING CODE ADMINISTRATORS AND CITY PLANNERS, BECAUSE WE RECOGNIZE THAT IMPLEMENTATION AND ENFORCEMENT OF EARTHQUAKE HAZARD REDUCTION IS ULTIMATELY A STATE AND LOCAL PROBLEM.

OUR BASIC PHILOSOPHY IS THIS: IF THE FEDERAL GOVERNMENT IS GOING TO ESTABLISH AN EARTHQUAKE INSURANCE PROGRAM--A PROGRAM THAT WOULD PROTECT NOT JUST HOMEOWNERS, BUT THE INSURANCE INDUSTRY ITSELF--THEN WE MUST ALSO ACT DECISIVELY TO REDUCE EARTHQUAKE HAZARDS. THE INSURANCE INDUSTRY--WHICH IS LOBBYING ENERGETICALLY FOR A FEDERAL EARTHQUAKE INSURANCE PROGRAM--CANNOT EXPECT THE GOVERNMENT TO SHOULDER THE RISK NOW BORNE BY THE INDUSTRY, UNLESS THE GOVERNMENT ALSO ACTS TO SUBSTANTIALLY REDUCE THAT RISK.

WE HAVE A DISTINGUISHED, AND DIVERSE, SET OF WITNESSES TODAY, AND I AM VERY MUCH LOOKING FORWARD TO THEIR TESTIMONY. I BELIEVE THAT THIS HEARING WILL BE AN IMPORTANT STEP TOWARD FORGING AN EFFECTIVE FEDERAL APPROACH TO THE REDUCTION OF EARTHQUAKE HAZARDS THROUGHOUT THE UNITED STATES.

OPENING STATEMENT

BY U.S. REP. JERRY COSTELLO, ILLINOIS

COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

JULY 25, 1990

"EARTHQUAKE INSURANCE AND HAZARD MITIGATION"

Mr. Chairman, this hearing focuses on earthquake insurance and how the insurance industry can encourage building owners to strengthen their properties. Scientists say that the probability of such an earthquake before the year 2030 is 97%. Additionally, the nature of the earth's crust in the eastern portion of the U.S. means that this quake could be felt for over 1000 miles.

Unfortunately, this area of the country is ill-prepared for such a disaster. The last major earthquake east of the Rocky Mountains was in 1811-1812 - so long ago that most citizens do not even know that it occurred. Therefore, building codes do not require earthquake-resistant construction, and bridges and highways are not built to withstand such a catastrophe.

This matter is of particular concern to me as I represent the 21st district of Illinois, which is located directly across the Mississippi River from St. Louis, MO. This area suffered a great deal of damage in the New Madrid quake of 1811-1812, and could be a center of destruction when the next earthquake occurs.

Today, we will discuss ways of improving the earthquake insurance and hazard mitigation. I look forward hearing from them, and I thank you, Mr. Chairman, for gathering us hear to address this vital subject.

Mr. VALENTINE. Thank you, sir.

Ms. Pelosi? I had your name first.

Ms. PELOSI. Thank you, Mr. Chairman. Our colleague, Mr. Swift has a markup in another committee, so with the committee's indulgence, I would like to yield to him first, if that's okay.

Mr. VALENTINE. By all means.

Ms. PELOSI. Thank you, Mr. Chairman.

STATEMENT OF HON. AL SWIFT, (D-WA)

Mr. SWIFT. Thank you very much, Ms. Pelosi; thank you, Mr. Chairman. I ask unanimous consent to submit my formal statement for the record.

Mr. VALENTINE. Without objection.

Mr. SWIFT. Essentially, what we have found very recently is that California is not alone in having an earthquake threat. I think there have been a great many of us from other parts of the country who tried to assume that that was a California problem, that we could carry on without any concern, and let the Californians worry about this problem. That's not true.

As a matter of fact, within two weeks of my introducing this legislation my District had two earthquakes. We also know that there about 38 States that face significant threat from earthquake. Therefore we need as a Nation a better approach of providing for insurance against earthquakes. The bill that I have introduced with David Dreier of California, as the prime Republican co-sponsor, seeks to do that.

It seeks to lay this issue on the table so we could begin to sort through all the questions that any new ideas such as this will stimulate. Congressman Brown and Congresswoman Pelosi have a somewhat different approach with regard to mitigation factors. I commend them both for laying on the table their approach. I think the responsibility of this committee is to begin to sort through those approaches, and other implications of this legislation.

I think that none of the four of us who are concerned with this expect that we are going to put legislation on the President's desk this year. But we do, I think all of us, share the hope that in the next Congress we will have sorted through these differences and other unintended consequences that the committee may discover as it continues to take information on this so that we can develop a unified proposal which we can submit to the President for his signature in the next Congress.

To that end, I commend our approach for the thorough consideration of the committee. I also commend Mr. Brown's approach for the thorough consideration of the committee. I stand ready to work with the committee in any way I can to help sort out those differences, address other problems that may crop up as you take testimony. As others examine these approaches, and have their suggestions and observations we will ultimately work out something that will work for the benefit of the public. We need to deal effectively with mitigation, and on that I happen to agree with the gentlemen from California, who is a very key player in this whole approach. We need to come up with something that will be rounded, whole, will work, and that we can pass in the Congress so that, by the

time we come here, say two years from today, we will have this problem solved.

With that, Mr. Chairman, I would yield back my time and thank the committee for its indulgence.

[The prepared statement of Mr. Swift follows:]

AL SWIFT
2d District, Washington

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Subcommittee on Telecommunications and Finance

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Subcommittee on Transportation and Hazardous Materials

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TESTIMONY BY

CONGRESSMAN AL SWIFT

Before the

Science, Research and Technology Subcommittee

July 26, 1990

Mr. Chairman, I appreciate your invitation to testify this morning on the legislation I have introduced to make earthquake insurance more affordable and available nationwide. I am pleased that twenty members from both parties and from ten different states across the country have joined me in cosponsoring this important legislation, including Congressman David Dreier of California who is the lead Republican sponsor.

The Federal Earthquake Insurance and Reinsurance Act, H.R. 4480, is a forward-looking approach aimed at protecting homeowners and our national economy from the catastrophic consequences of major earthquakes. I applaud this Subcommittee, Chairman Valentine, and Congressman Brown for holding these hearings so that the Congressional dialogue can begin on this and similar bills.

Let me start by reviewing some basic facts on the earthquake problem. First, catastrophic earthquakes are inevitable. Most seismologists agree that there is a virtual certainty that a major quake, at least 30 times more powerful than last year's San Francisco earthquake, will strike somewhere in the United States within the next 40 years. The old refrain "it's not if, but when" is unfortunately all too accurate concerning the likelihood of a devastating earthquake.

Second, major earthquakes can happen almost anywhere in our country. While we often think of California for quakes, the fact is that 39 states are vulnerable to major or moderate earthquakes. The Puget Sound region of my state, for instance, is especially susceptible to major quakes. In fact, over the past few months Whatcom County in my congressional district has experienced several earthquakes, including on that temporarily closed a Canadian border crossing facility. New geographic discoveries further suggest that Washington State could suffer a monster quake well in excess of any seismic even ever recorded in U.S. history. Earthquakes, moreover, are not solely a problem found on the west coast. Studies by the U.S. Geological Survey confirm that the "big one" could as easily occur east of the Rocky Mountains as in the western states.

Third, a catastrophic earthquake occurring anywhere in the country would have significant and lasting impacts for the entire nation. Just think of the destroyed lifelines such as highways, bridges, gas pipelines, transmission lines, and computer and telecommunications networks which would have a ripple effect in regions thousands of miles from the epicenter. In a catastrophic quake, insured losses could easily exceed $50 billion. This magnitude of loss

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would also ripple through the national economy impacting the stock and municipal bond markets, and thus adversely affecting every American. Some consumers following a massive quake might not be able to purchase insurance for ordinary perils such as auto and general liability, as many insurance companies would not have the funds available to write new policies. Taxpayers from all across the country would also be asked to pay for emergency appropriation measures that would undoubtedly speed through Congress following a calamitous earthquake.

Individual homeowners could suffer the most. Fewer than 5 percent of the homeowners nationwide have earthquake insurance. Even in high-risk areas of California, only about 25 percent have earthquake insurance. A major quake would be particularly tragic for those uninsured homeowners who could lose a lifetime's worth of equity in a few seconds of shaking.

My bill will go a long way towards remedying many of these problems. The legislation provides nearly universal earthquake coverage at affordable rates for homeowners. The program forges a partnership with the private insurers which pre-funds federal disaster assistance so that premiums from homeowners and insurance companies will pay for the relief following an earthquake, not just the taxpayers. The bill also establishes an excess program which acts as a "safety-net" to protect the national economy from the aftereffects of the truly catastrophic quake. All-in-all, H.R. 4480 better prepares America's homeowners and our fragile and interdependent economic system from the inevitability of major quakes.

Finally, let me mention the loss prevention issue which is the focus of this morning's hearing. I and the proponents of my legislation strongly embrace earthquake mitigation. A central element of earthquake preparedness is mitigating the losses from future earthquakes. My bill encourages mitigation by rewarding homeowners who take mitigation steps with lower premiums and deductibles. In addition, the legislation creates a model mitigation plan of seismic standards and building codes which states and localities are encouraged to adopt. The result is a meaningful, consensus-built mitigation program which is entirely consistent with the objectives of providing affordable and available earthquake insurance.

I commend Congressman George Brown for his earthquake insurance legislation which takes a different approach on the mitigation issue by requiring local communities to adopt federally-based seismic standards to qualify for earthquake insurance. The Congress owes the Congressman from California a debt of gratitude for his outstanding leadership on earthquake hazard reduction, as well as the leadership shown by Congresswoman Pelosi. Despite the differences on mitigation, my bill and Congressman Brown's bill are actually very similar and I believe they have the same short-term goal of stimulating the discussions necessary for discovering the best means to reaching an achievable earthquake loss mitigation plan. I hope the committee will look objectively at both mitigation approaches.

Thank you again for the opportunity to testify and I look forward to working with the Subcommittee in developing constructive earthquake insurance and mitigation legislation.

Mr. VALENTINE. Thank you, sir.
Ms. Pelosi?

STATEMENT OF HON. NANCY PELOSI, (D-CA)

Ms. PELOSI. Thank you very much, Mr. Chairman, for holding this hearing, and also for the opportunity to present my testimony. I want to, before our colleague leaves, commend him, as well as Mr. Brown of California, for their leadership on introducing legislation regarding earthquake insurance.

As you know, I am a Member of the House Banking Committee, and our committee has held some hearings on earthquake insurance and hazard mitigation, and Subcommittee on Policy, Research, and Insurance, and these hearings have given us the opportunity to put some basic issues in the debate on establishing new a new Federal program of this nature, so therefore it is a particular — I appreciate the opportunity to come to this committee of jurisdiction to present some of what I have learned in the course of those hearings and our unfortunate situation in Loma Prieta earthquake in California.

As you know, that earthquake focused public attention on the need for the establishment of Federal earthquake insurance program. The process and rebuilding in the Bay area since Loma Prieta has highlighted the shortcomings in the existing private earthquake insurance market. Premiums are often prohibitively high, and then, on top of that, there's a high deductible which discourages people from taking out the insurance to begin with.

At the same time, it has emphasized the value of mitigation that you pointed out in your opening statement, Mr. Chairman. Any consideration of insurance has to be tied, I believe, to a strong emphasis on mitigation. One of the main reasons that relatively few lives were lost in the Bay area was because of our strong building—the building codes there, that they were in place, that they were honestly enforced, and that, therefore, buildings built after a certain period of time were not affected at all by the earthquake.

The guiding principle behind any Federal earthquake insurance program, I believe, must be to reduce the level of risk. That's what mitigation is, as you know. Federal earthquake insurance should be designed to reduce the potential damage experienced on three fronts: To the life and property for the consumer, to the economy due to catastrophic threats to the insurance industry, and last and certainly not least to the Federal Government and the exposure to the taxpayer.

With that in mind, I believe, again, that the strong backbone must be mitigation in terms of mitigating the loss of life, suffering, and property damage, et cetera.

What we found in our experience, Mr. Chairman, was that a Federal dollar is going to be spent someplace in relationship to an earthquake. Where's the—what's the best dollar spent, in terms of, as I said, minimizing the exposure the exposure of the taxpayer, and also really anticipating and mitigating against disaster in a way that minimizes the loss sometimes irretrievable to all our citizens.

Our experience after Loma Prieta is that some people will never be made whole, no matter how many forms they fill out. It could be 60 pages of them. They will never be able to meet the whatever of the agencies, designed for disaster assistance. Some of these people would like to participate in an earthquake insurance program, find the premiums high, and, as I said, also the deductible's so high that they gamble against it. I believe that the availability of Federal earthquake insurance should be linked directly to the adoption of appropriate building codes and other mitigation.

I also believe that we should—that should include retrofitting, and all these should be seriously considered, and during our hearing several witnesses testified that new buildings can be built to stringent earthquake codes for relatively small additional amounts of money, so we are not talking about a drastic increase in the cost, but we are talking about a drastic increase in the savings. Some retrofitting of already existing structures can be relatively inexpensive, and we must make policy decisions regarding the cost and benefits of these older structures as a mitigation measure.

I will submit my full statement for the record, Mr. Chairman, and conclude by saying that, as I am sure you will hear from most of your witnesses today, earthquakes are not common only to California, as Mr. Swift has already pointed out. Communities across the country should learn from our experiences during and after Loma Prieta. They must face the fact, too, that they are at risk and start planning for the future.

I believe that a Federal earthquake insurance program with strong and mandatory mitigation components will facilitate this kind of planning. In the long run all Americans will benefit. Perhaps we can use some of the good aspects of the flood insurance program as a model, but we have to deal with compliance and mitigation to improve even that.

I thank you again for the opportunity to testify, and I look forward to working with Mr. Swift, Mr. Dreier, Mr. Brown on legislation, to develop a Federal earthquake insurance program under your leadership, Mr. Chairman.

Thank you.

[The prepared statement of Ms. Pelosi follows:]

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STATEMENT OF THE HONORABLE NANCY PELOSI

HEARING ON EARTHQUAKE INSURANCE AND HAZARD MITIGATION

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

JULY 26, 1990

MR. CHAIRMAN: THANK YOU FOR THE OPPORTUNITY TO TESTIFY BEFORE THIS SUBCOMMITTEE TODAY ON PROPOSALS TO ESTABLISH A FEDERAL EARTHQUAKE INSURANCE PROGRAM AND TO DISCUSS THE ROLE OF HAZARD MITIGATION IN ANY SUCH PROGRAM. I WOULD LIKE TO COMMEND MY COLLEAGUES, CONGRESSMAN GEORGE BROWN AND CONGRESSMAN AL SWIFT, FOR THEIR LEADERSHIP ON DEVELOPING LEGISLATION TO ADDRESS THE NEED FOR EXPANDED EARTHQUAKE INSURANCE.

AS YOU KNOW, THE HOUSE BANKING COMMITTEE, OF WHICH I AM A MEMBER, HAS HELD SEVERAL HEARINGS ON EARTHQUAKE INSURANCE AND HAZARD MITIGATION IN ITS SUBCOMMITTEE ON POLICY RESEARCH AND INSURANCE, UNDER THE LEADERSHIP OF CHAIRMAN ERDREICH. THESE HEARINGS, HELD ON FEBRUARY 7 HERE IN WASHINGTON AND ON FEBRUARY 16 IN SAN FRANCISCO, SERVED TO FOCUS ATTENTION ON THE NEED FOR A FEDERAL EARTHQUAKE INSURANCE PROGRAM AND ALLOWED SOME OF US INTERESTED IN THIS ISSUE TO DEFINE THE BASIC ISSUES IN THE DEBATE ON ESTABLISHING A NEW FEDERAL PROGRAM OF THIS NATURE.

THE OCTOBER 17 LOMA PRIETA EARTHQUAKE GALVANIZED PUBLIC INTEREST AND PUBLIC POLICY INTEREST IN THE ESTABLISHMENT OF A

FEDERAL EARTHQUAKE INSURANCE PROGRAM. THE PROCESS OF REBUILDING IN THE BAY AREA SINCE THE LOMA PRIETA EARTHQUAKE HAS HIGHLIGHTED THE SHORTCOMINGS IN THE EXISTING PRIVATE EARTHQUAKE INSURANCE MARKET. PREMIUMS ARE OFTEN PROHIBITIVELY EXPENSIVE AND DEDUCTIBLES ARE SO HIGH THAT MANY PEOPLE HAVE OPTED NOT TO EVEN CARRY EARTHQUAKE INSURANCE.

AT THE SAME TIME THAT THE LOMA PRIETA EARTHQUAKE HIGHLIGHTED SHORTCOMINGS IN PRIVATE EARTHQUAKE INSURANCE, IT ALSO HIGHLIGHTED THE VALUE OF MITIGATION EFFORTS. THE STRONG BUILDING CODES IN THE BAY AREA ARE ONE MAJOR REASON WHY RELATIVELY FEW LIVES WERE LOST.

THE GUIDING PRINCIPLE BEHIND ANY FEDERAL INSURANCE PROGRAM MUST BE TO REDUCE THE LEVEL OF RISK. FEDERAL EARTHQUAKE INSURANCE SHOULD BE DESIGNED TO REDUCE THE POTENTIAL DAMAGE EXPERIENCED ON THREE FRONTS -- TO LIFE AND PROPERTY FOR THE CONSUMER, TO THE ECONOMY DUE TO CATASTROPHIC THREATS TO THE INSURANCE INDUSTRY AND TO THE FEDERAL GOVERNMENT AND THE TAXPAYER. I BELIEVE THAT THE BACKBONE OF A FEDERAL EARTHQUAKE INSURANCE PROGRAM MUST BE A STRONG MITIGATION ELEMENT. THROUGH MITIGATION, COST IN HUMAN LIFE, SUFFERING AND PROPERTY DAMAGE IS REDUCED. MITIGATION SHOULD ENCOURAGE RESPONSIBLE LAND MANAGEMENT AND USE; HAZARDOUS MATERIAL DISPOSAL; EMERGENCY PREPAREDNESS PLANS AND EARTHQUAKE DAMAGE PREVENTION.

I ALSO BELIEVE THAT THE AVAILABILITY OF FEDERAL EARTHQUAKE INSURANCE SHOULD BE LINKED DIRECTLY TO THE ADOPTION OF APPROPRIATE BUILDING CODES AND OTHER HAZARD MITIGATION MEASURES,

AS IN H.R. 4915, THE BROWN BILL, RATHER THAN COUNTING ON VOLUNTARY HAZARD-MITIGATION, AS IN H.R. 4480, THE SWIFT BILL.. AS I HAVE CONSIDERED THE DEVELOPMENT OF A FEDERAL EARTHQUAKE INSURANCE PROGRAM, I HAVE FOUND THAT THE FEDERAL FLOOD INSURANCE PROGRAM COULD SERVE AS AN APPROPRIATE INITIAL TEMPLATE FOR EARTHQUAKE INSURANCE.

THE FLOOD INSURANCE PROGRAM REQUIRES LOCALITIES TO ADOPT REGULATIONS BEFORE THEY CAN PARTICIPATE IN THE PROGRAM. MITIGATION SHOULD NOT AND CANNOT BE A HIT-OR-MISS, VOLUNTARY PROPOSITION. BEFORE WE EXPOSE THE FEDERAL GOVERNMENT TO POTENTIAL LOSSES, WE MUST ENSURE THAT ALL POSSIBLE STEPS ARE TAKEN TO REDUCE ULTIMATELY THE COST TO THE FEDERAL GOVERNMENT. OVER TIME, MITIGATION CAN REDUCE COST IN FEDERAL DISASTER ASSISTANCE.

I KNOW THAT A NUMBER OF LEGITIMATE QUESTIONS HAVE BEEN RAISED ABOUT THE LEVEL OF COMPLIANCE AND THE ACTUAL LEVEL OF PARTICIPATION IN THE FLOOD INSURANCE PROGRAM, AND HOW THAT WOULD TRANSLATE TO A SIMILAR STRUCTURE FOR THE EARTHQUAKE INSURANCE PROGRAM. AS YOU HEAR FROM THE WITNESSES TODAY, I WOULD JUST LIKE TO ASK YOU TO REMEMBER THE DIFFERENCE BETWEEN MITIGATION AND COMPLIANCE.

FAILURE TO COMPLY IS A FAILURE ON THE PART OF THE PARTICIPANTS IN A PROGRAM TO DO WHAT THEY HAVE A MANDATE TO DO, AS WELL AS A FAILURE ON THE PART OF THOSE AGENCIES AND INDIVIDUALS RESPONSIBLE FOR OVERSIGHT OF THE PROGRAM. EFFORTS ARE UNDERWAY TO IMPROVE THE COMPLIANCE RATE IN THE FEDERAL FLOOD

INSURANCE PROGRAM. THESE MEASURES SHOULD BE INCLUDED IN LEGISLATION TO ESTABLISH A FEDERAL EARTHQUAKE INSURANCE PROGRAM.

OTHER ISSUES RELATED TO MITIGATION, INCLUDING RETROFITTING, ALSO NEED TO BE SERIOUSLY CONSIDERED. DURING OUR HEARINGS, SEVERAL WITNESSES TESTIFIED THAT NEW BUILDINGS CAN BE BUILT TO STRINGENT EARTHQUAKE CODES FOR A RELATIVELY SMALL ADDITIONAL AMOUNT OF MONEY. SOME RETROFITTING OF ALREADY EXISTING STRUCTURES CAN BE RELATIVELY INEXPENSIVE. AT THE SAME TIME, WE MUST MAKE A PUBLIC POLICY DECISION REGARDING THE COSTS AND THE BENEFITS OF REQUIRING EXTENSIVE RETROFITTING OF OLDER STRUCTURES AS A MITIGATION MEASURE.

SOME PEOPLE IN THE BAY AREA WITH EARTHQUAKE INSURANCE HAVE ENCOUNTERED SOME PROBLEMS WITH THEIR POLICIES. A CLAUSE IN MANY INSURANCE POLICIES RELATING TO REPLACEMENT COSTS IS BEING INTERPRETED AS ONLY REQUIRING THE COMPANIES TO PAY FOR REPLACEMENT USING ORIGINAL MATERIALS. BECAUSE OF THE CONSTANT UPGRADING OF CALIFORNIA BUILDING CODES, MANY DAMAGED HOMES NOW NEED REPAIRS REQUIRING ENTIRELY NEW MATERIALS AND FOUNDATIONS, WHICH ARE OFTEN MORE EXPENSIVE.

A CALIFORNIA APPEALS COURT RULED THAT INSURANCE COMPANIES ONLY MUST PAY ORIGINAL MATERIAL AND CONSTRUCTION COSTS, REGARDLESS OF WHETHER EQUIVALENT CONSTRUCTION MEETS NEW BUILDING CODES. THE RULING IS CURRENTLY ON APPEAL TO THE CALIFORNIA SUPREME COURT. IT IS MY UNDERSTANDING THAT SOME INSURANCE COMPANIES MAY INDEED OFFER A SEPARATE ENDORSEMENT THAT WOULD PREVENT THIS KIND OF PROBLEM. HOWEVER, THESE RIDERS ARE

FREQUENTLY NEITHER PUBLICIZED NOR USED. DISCUSSIONS OF INSURANCE AND HAZARD MITIGATION MUST FACTOR IN A SOLUTION TO THIS KIND OF PROBLEM.

AMONG THE OTHER PUBLIC POLICY ISSUES WHICH MUST BE DECIDED AS WE DEVELOP FEDERAL EARTHQUAKE INSURANCE IS WHAT IS THE APPROPRIATE LEVEL OF RISK TO THE FEDERAL GOVERNMENT, AND WHAT IS THE APPROPRIATE LEVEL OF RISK TO THE INSURANCE INDUSTRY? I MUST ADMIT THAT I HAVE SERIOUS QUESTIONS ABOUT THE ESTABLISHMENT AND THE STRUCTURE OF A REINSURANCE PROGRAM FOR FEDERAL EARTHQUAKE INSURANCE. I DO NOT BELIEVE THAT WE CAN AFFORD TO ESTABLISH A PROGRAM WHICH WILL REQUIRE A MAJOR FEDERAL BAIL-OUT OF AN INDUSTRY. THE INSURANCE INDUSTRY IS BASED ON EVALUATING RISK. AS THE INSURANCE COMPANIES WELL KNOW, THE RISKS INCLUDE LOSSES AS WELL AS PROFITS. I CANNOT AND WILL NOT SUPPORT A PROGRAM WHICH ULTIMATELY PROVIDES FOR THE PRIVATIZATION OF GAIN FOR THE INSURANCE INDUSTRY AND THE SOCIALIZATION OF LOSS FOR THE TAXPAYER. OUR GOAL SHOULD BE TO DEVELOP A PROGRAM WHICH WILL ENCOURAGE THE DEVELOPMENT OF STRONG MITIGATION FACTORS, WHILE MAKING EARTHQUAKE INSURANCE MORE AVAILABLE AND MORE AFFORDABLE FOR CONSUMERS.

LAST WEEK, THE UNITED STATES GEOLOGICAL SURVEY (USGS) ISSUED ITS REVISED "THIRTY-YEAR PROBABILITY REPORT OF LARGE EARTHQUAKE IN THE SAN FRANCISCO BAY REGION". THIS REPORT INDICATES THAT THERE IS NOW A 67 PERCENT PROBABILITY OF A MAGNITUDE 7.0 OR LARGER EARTHQUAKE IN THE BAY AREA DURING THE NEXT THIRTY YEARS, A SUBSTANTIAL INCREASE FROM THE 50 PERCENT PROBABILITY ESTIMATED

BY THE USGS IN 1988.

THIS DRAMATIC INCREASE IN THE PROBABILITY OF A MAJOR EARTHQUAKE IN ONE OF THE NATION'S SIGNIFICANT METROPOLITAN AREAS SHOULD PROVIDE US WITH ENOUGH INCENTIVE TO CONTINUE TO PURSUE THE DEVELOPMENT OF A FEDERAL EARTHQUAKE INSURANCE PROGRAM. AS I AM SURE YOU WILL HEAR FROM MOST OF YOUR WITNESSES TODAY, HOWEVER, EARTHQUAKES ARE NOT ONLY A CALIFORNIA PHENOMENON. COMMUNITIES ACROSS THE COUNTRY SHOULD LEARN FROM OUR EXPERIENCES DURING AND AFTER THE LOMA PRIETA EARTHQUAKE. THEY MUST FACE THE FACT THAT THEY, TOO, ARE AT RISK AND START PLANNING FOR THE FUTURE. I BELIEVE THAT A FEDERAL EARTHQUAKE INSURANCE PROGRAM WITH STRONG AND MANDATORY MITIGATION COMPONENTS WILL FACILITATE THIS KIND OF PLANNING. IN THE LONG RUN, ALL AMERICANS WILL BENEFIT.

THANK YOU AGAIN FOR THIS OPPORTUNITY TO TESTIFY. I LOOK FORWARD TO CONTINUING TO WORK WITH MY COLLEAGUES ON THE DEVELOPMENT OF A FEDERAL EARTHQUAKE INSURANCE PROGRAM.

Mr. VALENTINE. Thank you very much.
Mr. Dreier?

STATEMENT OF HON. DAVID DREIER, (R-CA)

Mr. DREIER. Thank you very much, Mr. Chairman.

It would seem that maybe earthquakes are just a West Coast phenomenon. We've been joined by my friend, also, from the Bay Area, Mr. Campbell, but, in fact, as that has been pointed out in your opening statement, 39 States, 200 million Americans are impacted by earthquakes, and it is a devastating situation which faces virtually everyone in this country, especially with the tremendous degree of mobility which exists in this Nation.

I come from Missouri where the New Madrid Fault created the largest earthquake in the history of this country. That's my original home State before I went to California, and many people are shocked to hear that that part of the country could be faced with the possibility of an earthquake, and I think it's for that reason that we have moved ahead with this kind of legislative response to what is clearly a very serious problem.

Mr. Brown and I share the same basic area. Within a three- year period, we have suffered a number of earthquakes. George was just quipping before we met here that we don't feel like things are going well in California if we don't have an earthquake every few days, and we suffer from mild earthquakes very often, but these major earthquakes, the October 1st earthquake of 1987, which specifically impacted my area, Whittier, California, it was known as the Whittier Narrows earthquake, 6.1 on the Richter Scale, was devastating. The damage caused was overwhelming.

The thing that hit me most about that earthquake, Mr. Chairman, was the response by the Federal Emergency Management Agency and the Small Business Administration to that, and I was very dissatisfied with the response that the Federal Government had at that point. My colleagues, Ms. Pelosi and Mr. Campbell know that, having gone through that experience, when, on October 17th, of 1989, we saw the horrible San Francisco-Loma Prieta earthquake, I tried to respond to provide assistance to my colleagues in the Bay area, who were going to be dealing with the problems created with this Federal response. And over the basic two-year period between those quakes, I spent a great deal of time testifying before a number of committees here, Appropriations, Subcommittees, trying to make modifications in the law, and we were able to get, I'm happy to say from reports that I got from Mr. Campbell and Ms. Pelosi, a better Federal response.

But the thing that has happened, Mr. Chairman, as we have seen, most everyone in this country looked to one entity as a respondent to disasters, and that's the Federal Government. And I think that what we are doing with the legislation which Mr. Swift and I have introduced is we are making an attempt to bring in the private sector through the private insuring arm to involve itself in meeting this. We know that in response to the Hurricane—Hurricane Hugo last year and the San Francisco earthquake, Loma Prieta earthquake, that we saw a $4 billion emergency appropriation to respond to that disaster. And it seems to me, with that kind

of immediate Federal response, we should look for a way so that every single American doesn't have to pay $32, as was the case in response to those disasters, and what we need is, we need to look at a way in which we can have the Government work in a partnership package, providing a backdrop, if you will, for this kind of disaster for the insurance disaster.

Now that doesn't have a great deal of appeal, in light of the fact that, over the past several years, we have seen several Federal-insuring entities belly up, go upside down. But I think as we look at the crisis of an earthquake, it's important that we do have a response, and, what I believe, should be a responsible program to this.

I'm not going to go into a lot of details of our legislation, because, actually, the legislation which George and I have is very similar, with one particular exception. That is, in the area of mitigation standards, and I am going to make a couple of comments about that, Mr. Chairman.

For starters, I will underscore that I believe that mitigation standards are very important, and, as I was saying to a couple of people here just before we started, it's very clear, if you look at the earthquake in our media, in Rosht, Iran, and Baugio, the Philippines, and juxtapose the effects of those earthquakes next to the mitigation standards which existed in the San Francisco Bay Area, it's very clear to me that mitigation standards are important. The question is, how do we impose or create those mitigation standards? And I think that we should not micromanage in this legislation a package which would impose those kinds of standards, and we should have the private sector through incentives with the whole insurance premium area, and, at the same time, local governments involved in determining that.

There are a couple of examples that people use as to reasons that we should go ahead with strong mitigation standards in this legislation.

One of those is the National Flood Insurance Program, and I don't believe it's an appropriate model to address the issue of mitigation. The National Flood Insurance Program mandates mitigation as a condition for program eligibility, and that mandate has not served the program well. There are about 2.3 million flood insurance policies in force, but about 10 million homes in the designated special flood hazard areas, which have no insurance protection. Overall, the National Flood Insurance Program has only a 14 percent compliance rate. As a result, when a major flood hits, an NFIP flood prone area disaster assistance is usually called upon to make up the difference. And, once again, the taxpayer is the one called upon to respond.

Mapping for earthquakes will be prohibitively expensive. So far, the National Flood Insurance Program has mapped flood areas covering about 13 million of the total 90 million homes in America at a cost of a billion dollars. Mapping the whole country for earthquakes could cost $5 billion dollars, Mr. Chairman. Mapping flood prone areas is simple, given the localized nature of floods, their short recurrence rates, and the fact that floods are usually confined to low-lying areas.

Mapping earthquake prone areas is infinitely more difficult because they're unpredictable. Mandated mitigation will not limit the Government's loss exposure to a Federal earthquake insurance program. It'll have the opposite effect, because the program won't be universal. Most communities simply will not participate. To achieve low premiums, the program needs to be universal to spread the risk throughout the country.

Mitigation steps should be cost effective, Mr. Chairman. With new homes, they can be, but it makes little sense to pay half the value of an older home, when the odds are that a destructive earthquake will occur once every century. Structural engineers estimate that meeting the seismic code will add two to four percent to the cost of a new home. Retrofitting older homes, however, particularly unreinforced masonry construction, can cost up to 50 percent of the value of the house. It's more cost effective for the home owner to pay earthquake insurance premiums than to spend thousands of dollars to retrofit the house.

Mr. Chairman, it's very apparent that we want to move ahead with insuring an earthquake insurance package. People are recognizing in this Congress that there are parts of the country not exempt from this kind of threat. And I, again, look forward to working with all of my colleagues who are involved in this kind of legislative goal, and, while Al Swift said earlier it's not going to happen this year, I hope very much that we will be able to begin the process of moving ahead with a plan which will insure, that we will have a more cost-effective and efficient response to the tragedy of earthquakes.

Thank you very much, Mr. Chairman. I ask unanimous consent that my entire statement be provided for the record.

Mr. VALENTINE. Without objection.

[The prepared statement of Mr. Dreier follows:]

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SMALL BUSINESS COMMITTEE
CHAIRMAN
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CO-CHAIRMAN
HOUSING TASK FORCE
U.S. MEXICO INTERPARLIAMENTARY CAUCUS
SPECIAL TASK FORCE ON ENVIRONMENT

STATEMENT OF THE HON. DAVID DREIER
BEFORE THE
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY
HEARING ON EARTHQUAKE INSURANCE AND HAZARD MITIGATION
THURSDAY, JULY 26, 1990

Mr. Chairman, members of the Subcommittee, thank you for holding this important hearing on the need for federal earthquake insurance. I am pleased to have the opportunity to join my colleague from Washington State as a cosponsor of H.R. 4480, and I look forward to working closely with him and the members of this Subcommittee to enact into law a viable earthquake insurance program.

I also want to note that my colleague from California, Mr. Brown, and I have the distinction of representing a region that has been victimized by a number of earthquakes in the last three years. I've seen the devastation, and the serious deficiencies in federal and state disaster aid programs -- which are short-term and concentrate on saving lives and restoring order. It has become apparent to me that a federal earthquake insurance program is the most cost-effective way to provide the funds needed to protect homeowners from the financial devastation brought about by earthquakes.

Of course, many people will argue that a federal earthquake insurance program adds another contingent liability to the existing

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payer burdens. We are often reminded of the fact that four federal insurance funds have lost at least $4 billion in the 1980s. But it's important to realize that the government already faces a massive contingent liability should a major earthquake occur. A federal earthquake insurance program would reduce the taxpayers' liability by creating a self-funding program will partially preclude the need for taxpayer assistance. And such a program will be more equitable for homeowners living in low-earthquake-risk states.

For example, last October, Congress appropriated nearly $4 billion in disaster assistance in the wake of the San Francisco earthquake. That disaster assistance package cost every working American an average of $32, and it didn't distinguish between taxpayers who live in earthquake-prone areas and those that don't. Under the model set up in H.R. 4480, a homeowner in Florida will pay approximately $2 per year per $100,000 of coverage, while homeowners in high-risk states like California will pay approximately $30-40 for the same coverage. It is obvious that a national insurance program is more equitable. More important, it will make earthquake insurance more affordable.

I'm sure that my colleague from California agrees with me on these points, since the insurance provisions of our two bills are very similar. Where we disagree, however, is on the issue of hazard mitigation. In fact, the two of us participated on a panel last month and debated this issue at length. I would like to reiterate some of the concerns I raised against mandated mitigation provisions at that time.

1. The National Flood Insurance Program (NFIP) is not an appropriate model to address hazard mitigation. The NFIP

mandates mitigation as a condition for program eligibility, and that mandate has not served the program well. There are about 2.3 million flood insurance policies in force, but about 10 million homes in the designated "special flood hazard areas" have no insurance protection. Overall, the NFIP has only a 14 percent compliance rate. As a result, when a major flood hits an NFIP flood-prone area, disaster assistance is usually called upon to make up the difference.

2. Mapping for earthquakes will be prohibitively expensive. So far, the NFIP has mapped flood areas covering about 13 million of the total 90 million homes in America at a cost of $1 billion. Mapping the whole country for earthquakes could cost $5 billion. Mapping flood-prone areas is simple given the localized nature of floods, their short recurrence rates, and the fact that floods are usually confined to low-lying areas. Mapping earthquake-prone areas is infinitely more difficult because they are unpredictable.

3. Mandated mitigation will not limit the government's loss exposure to a Federal earthquake insurance program. It will have the opposite affect because the program won't be universal. Most communities simply will not participate. To achieve low premiums, the program needs to be universal to spread the risk throughout the country.

4. Mitigation steps should be cost-effective. With new homes, they can be. But it makes little since to pay half the value of an older home when the odds are that a destructive earthquake will occur once every century. Structural engineers estimate that meeting the seismic code will add

two-to-four percent to the cost of a new home. Retrofitting older homes, however, particularly unreinforced masonry construction, can cost up to 50 percent of the value of the house. It is more cost-effective for the homeowner to pay earthquake insurance premiums than spend thousands of dollars to retrofit the house.

Mr. Chairman, we all recognize that mitigation must be an important component of a national earthquake insurance program. It seems to me that a more cost-effective approach might be to require new construction to abide by seismic building codes while, for older homes, insurance premiums could be structured to encourage homeowners to pursue cost-effective mitigation measures.

I'm not quite sure that we have all the right answers at this time. That's why this hearing is so important. I want to commend you, Mr. Chairman, for your willingness to examine the merits and drawbacks of the two competing approaches to earthquake insurance and hazard mitigation. I hope that we can come to an early consensus on hazard mitigation so that a federal earthquake insurance program can become an integral part of our national earthquake policy in the near future.

Thank you, Mr. Chairman.

Mr. VALENTINE. We thank our colleagues for your interest, for the time invested in these important matters, for your preparation and appearance here today. We have a quorum call. I want to get as much in as we can before we depart, and I'll recognize Mr. Boehlert for his opening statement, and then other Members of the subcommittee for questions and statements.

Mr. BOEHLERT. Thank you very much, Mr. Chairman. I want to thank you for holding this hearing on the Brown-Boehlert-and-Swift-Dreier Bills.

I think there is substantial agreement among all of us in this room that we need a well thought out, proactive Federal earthquake insurance program. We have a Federal insurance program now. It's called Disaster Assistance. It does nothing to prevent death and destruction, and it's unfunded liability is some incalculable ratio of the damage caused by the next quake and Congress' willingness to pay for it. So I am eager to work with all parties to come up with a more rational system, which is why I have co-sponsored H.R. 4480 as well as our own bill. But I must say to my friends in the insurance industry that any insurance program must have a mitigation element with real teeth, something sorely lacking in H.R. 4480. Why should the Federal taxpayer be on the hook to pay for losses in communities that were unwilling to take the known steps to prevent death and damage? The Federal Government helps those who help themselves.

The kind of mandatory mitigation sought in H.R. 4915 is not unwarranted government intervention any more than requiring seat belts was, a move the insurance industry sites favorably in its testimony.

You know, most drivers view seat belt laws as Government intrusion, right up until the second they're saved from having their heads smashed through the windshield. After that, the Government is praised for its responsibility and foresight.

To fail to include real mitigation in insurance, is really to exploit the public's shortsightedness. It's the moral equivalent of selling someone the Brooklyn Bridge. We want, as I know all of our witnesses do, a program that saves lives, property, and taxpayer dollars. I'm sure today's testimony will help us achieve that result.

Thank you, Mr. Chairman.

[The prepared opening statement of Mr. Boehlert follows:]

OPENING STATEMENT
HONORABLE SHERWOOD BOEHLERT
HEARING ON EARTHQUAKE INSURANCE AND
HAZARD MITIGATION
JULY 26, 1990

Mr. Chairman:

I want to thank you for holding this hearing on the Brown-Boehlert and Swift-Dreier bills.

I think there is substantial agreement among those of us in this room that we need a well thought-out, pro-active federal earthquake insurance program. We have a federal earthquake insurance program now - it's called disaster assistance. It does nothing to prevent death and destruction, and its unfunded liability is some incalculable ratio of the damage caused by the next quake and Congress' willingness to pay for it.

So I am eager to work with all parties to come up with a more rational system, which is why I have co-sponsored H.R. 4480 as well as our own bill.

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To fail to include real mitigation in insurance is really to exploit the public's short-sightedness. It's the moral requirement of selling someone the Brooklyn Bridge.

We want - as I know all our witnesses do - a program that saves lives, property and taxpayer dollars. I'm sure today's testimony will help us achieve that result.

Mr. DREIER. Mr. Chairman, I infer from Mr. Boehlert's opening statement, a question. May I respond just very briefly to the question?

Mr. VALENTINE. Yes.

Mr. DREIER. I simply wanted to say, Sherry, that, as far as mitigation standards are concerned, H.R. 4480 is not lacking in mitigation standards. It establishes a board which can recommend those mitigation standards, and they can be put into place. We simply are saying that we don't want to micromanage within the legislative package itself, those kinds of standards. So I just would underscore, in response to that, again, yes, I'm supportive of them, but we leave a degree of flexibility within our board to determine that.

Mr. BOEHLERT. I appreciate that comment. I would suggest, perhaps, and maybe it's just my interpretation, that the mitigations are a little bit soft, and I'd like to firm them up a little bit.

Mr. DREIER. Well, they can be firmed up by that board, and that's what can happen.

Mr. VALENTINE. Thank you. Mr. Brown?

Mr. BROWN. May I yield to Mr. Campbell, since he hasn't had an opportunity to comment yet.

Mr. CAMPBELL. I appreciate that very much. I'll be extremely brief. Just by way of saying I'm so sorry I did not hear my colleague, Congresswoman Pelosi's opening statement. I do, however, have a copy of it. I've always found your views extremely helpful and enlightening, and I remember the work we did together after the earthquake, so I'm the loser for not having been here for your remarks.

I am glad to have heard my colleague, David Dreier, my teacher, for whom I have the greatest respect, and I think if you have suggestions relative to hazard mitigation and financial preparation for the next earthquake, then it's advice to which we should all listen most carefully.

And, with that, I yield back.

Mr. DREIER. Well, thank you, but to be referred to as a teacher to one of the best teachers, is really something, so I thank you for that, Tom.

Mr. VALENTINE. Mr. Brown?

Mr. BROWN. I'm going to just make a comment that adds to what has been said here. First, I think we are agreed as to objectives. We may have some problems with the exact means of reaching that, but the purpose of these hearings is to see if we can come closer to agreement on that.

I include in our objectives, preserving the stability and the efficacy of the insurance industry in this country, which I think is extremely important to do, but it is not the sole goal of any insurance legislation. I also want to point out that out fail to act could have catastrophic consequences. And, while I don't like to use the Philippines as an example, it is clear that the earthquake there has politically destabilized the Government of the Philippines, caused them to consider reneging or rescheduling their foreign debt, and done some other things. Now that couldn't happen in the United States, but something parallel to that could happen if we fail to act aggressively and are confronted with a massive disaster for which

we are unprepared to respond, and it is urgent that we be able to do something about that.

Mr. VALENTINE. Thank you, sir.

Let me say to the group assembled here, this is a quorum call, and it precedes a report by the Ethics Committee, presumably. This is a matter of more than ordinary concern to most members of the House, so we will get back as soon as we can. I don't mean to suggest to you that we will suspend this operation through all of that, but it will be more than the normal delay before we get back.

Ms. Pelosi?

Ms. PELOSI. Mr. Chairman, with your permission, if I may make a final comment, because I have to go to my other committee after the quorum call and the business on the floor, I am appreciative of your giving me just a half a moment.

I want to thank Mr. Campbell for his comment.

I just wanted to respond to one statement that Mr. Dreier made that I think the committee should consider as you deliberate.

The gentleman talked about, that building new structures, it's easy to put mitigation in there that costs two to five percent more, I think, percentage to that effect, he mentioned. But it costs a lot more with unreinforced masonry buildings or homes. Those are exactly the kind that are a real problem, as a matter of fact, and I think that, in certain parts of the country, we should remember that the original cost of the home is not necessarily the problem.

If our people in our area, as Mr. Campbell's and mine, could pay what the original cost of the home to keep their home, that would be fine. But, for example, some people may have bought their home 25, 30 years ago at one cost, or it may have been built 40 years ago at a cost. So to reinforce it, even though it is not a new structure, is going to be a big savings in case of earthquake, compared to what the cost and value of that property is in—I don't want to say inflated, but with appreciation to present cost of the property.

So, again, when we talk about exposure of the taxpayer in these instances, and we talk about a Federal dollar being spent, I agree with the comment that you made in your opening statement, and would make sure that we consider not only the original cost of construction and the mitigation to that, but the value of the replacement cost today should there not be mitigation, and especially unenforced masonry, which was one of the main problems in the earthquakes.

So I appreciate your permission giving me the opportunity to place that comment on the record because it was a big problem for us in our area.

Thank you, Mr. Chairman.

Mr. VALENTINE. Thank you. Thank you very much.

We'll be back after a short delay.

[Recess.]

Mr. BROWN [ASSUMING CHAIR]. We'd like to call first witness, Mr. Francis V. Reilly, Deputy Federal Insurance Administrator for FEMA.

The Chairman of the committee, Mr. Valentine, will be back shortly, and he has asked me to keep the momentum going here, so that we may be able to expeditiously conclude the hearing during the course of the morning.

Before recognizing the witness, I'd like to call on Ms. Schneider for any statement that she might wish to make at this point.

Ms. SCHNEIDER. I have no statement, Mr. Chairman.

Mr. BROWN. All right.

We welcome you here this morning, Mr. Reilly, and you may proceed with your statement, the full text of which will appear in the record at this point, should you desire to abbreviate it in any way.

STATEMENT OF FRANCIS V. REILLY, DEPUTY FEDERAL INSURANCE ADMINISTRATOR, FEDERAL EMERGENCY MANAGEMENT AGENCY; ACCOMPANIED BY: GARY JOHNSON, CHIEF, FEMA, EARTHQUAKE AND NATURAL HAZARDS PROGRAM DIVISION; AND JIM TAYLOR, ASSISTANT ADMINISTRATOR FOR INSURANCE SUPPORT SERVICES

Mr. REILLY. Thank you, Mr. Chairman, Congressman Brown.

I have summarized the written statement in accordance with your wishes to maximize the time for questions, but I would like to read that oral statement, although it's shorter, because of the importance of the matters before us.

Mr. BROWN. You may do so.

Mr. REILLY. Mr. Chairman and Distinguished Members of the Subcommittee, I am pleased to appear today to offer comments on two proposals for establishing Federal earthquake insurance program, H.R. 4915 and H.R. 4480.

With me today to assist in any questions which may arise, are Gary Johnson, Chief of FEMA's Earthquake and Natural Hazards Program Division; and Jim Taylor, FIA's Assistant Administrator for Insurance Support Services, who is Chairman of a National Earthquake Hazard Reduction Program, Federal Agency Subcommittee. This committee formed to coordinate their actions relative to earthquake insurance, share information on developments, and maintain liaison with the insurance industry.

FIA studies completed in 1971 and 1981 on the need for a Federal earthquake insurance program concluded that, as a practical matter, there was no role for the Federal Government unless the private insurance sector and the States determined that the potential liability was beyond their ability to handle, and they sought Federal assistance. Since then an insurance consensus has developed to seek Federal involvement in a National Earthquake Insurance Program.

Also, reviews of the earthquake insurance issues by the Expert Review Committee of the National Earthquake Hazard Reduction Program in 1987 and by the National Earthquake Hazard Reduction Program Police workshops last May, highlighted the need to consider Federal involvement with the private insurance industry in an earthquake insurance program.

Knowing that loss-reduction measures must play an important part in any insurance program involving the Federal Government, FEMA initiated, in 1988, a study designed to identify cost- effective and practical mitigation measures that could be incorporated into an earthquake insurance program.

I know that your subcommittee wants to know whether the National Flood Insurance Program is a good model for earthquake in-

surance. From the point of view of its floodplain management program, it certainly is a good model. The effectiveness of floodplain management results from the close integration of loss reduction requirement with the hazard mapping and the insurance aspects of the program. The focus on the State and local governments as the principal actors in loss reduction is appropriate for earthquakes as well as for floods, with the Federal Government establishing minimum loss-reduction requirements and providing strong technical assistance.

The Congress should be aware of the problems which face the National Flood Insurance Program. While new construction is risk rated, the program is statutorily required to subsidize existing construction. This subsidized rating is currently approximately one-third of the full risk rating. In addition, the lack of enforcement of the mandatory purchase requirement has hampered the program's growth and increased adverse selection. Returning to today's concerns, at this point, Mr. Chairman, the Administration opposes enactment both of 4480 and H.R. 4915 in their current form.

In reviewing the two bills before the committee, we have applied the following general principles outlined by the Administration.

First: The proposals must be designed to correct a market failure. It is not clear that there has been a market failure. Private sector insurance is available. Also, the lines for insurance for which reinsurance is sought, are now available to the insurance-buying public.

Further, State Governments with a critical level of earthquake hazard, have not sought a direct Federal insurance role. Therefore, the existence of a market failure needs to be carefully examined before appropriate remedies can be designed.

Second: The proposals must utilize a rate structure that will produce risk based premiums. To the extent practical, cross subsidies should be avoided. We believe risk based premiums provide an important deterrent to discourage unwise new construction and provide an important incentive to property owners to consider retro-fitting high risk properties, and/or assume a large share of the risks through high deductibles or by continuing to go uninsured.

Neither bill fully meets this general principle. H.R. 4915 provides for risk base premiums for new construction, but it also provides for taxpayer subsidized rates for existing construction. H.R. 4480 does not specifically prescribe that risk based premiums be used.

Third: The proposal must include provisions requiring States and communities to adopt and enforce appropriate land use and building codes. This will reduce the risk of loss of life and property damage as a quid pro quo for insurance availability. H.R. 4915 meets this principle. H.R. 4480 does not.

Four: The proposals must provide for Government oversight and control of any funds collected and of the operation and management of the programs. H.R. 4915 definitely meets this criteria. 4480 appears to meet this criteria, however, its proponents should clarify this issue.

Fifth: The proposals must be designed to be deficit- neutral. H.R. 4915 would permit significant subsidy for existing construction, and therefore does not meet this criteria. H.R. 4480 has as its objective

deficit neutrality, although this may require a long period of time to achieve. Given the significant budgetary threats that result from Federal programs involving contingent liabilities, any proposal for a new Federal insurance must be viewed with extreme caution.

Six: The proposals must include a provision for Government/ insurance risk sharing. Both proposals do this, although the Administration has not arrived at a conclusion as to what level of risk sharing is appropriate. It must be noted that H.R. 4480 does not require participation in the primary program as a quid pro quo for reinsurance. This gives us some concern.

In addition, our review of both bills included an examination of provisions that would advance the goals Congress intended for the National Earthquakes Hazard Reduction Program. H.R. 4480 does not provide a linkage between the denial of the availability of earthquake insurance, coupled with financial sanctions on a community, for failing to require and enforce mitigation measures, a linkage that would provide a powerful leverage in achieving the hazard mitigation goals of the National Earthquake Hazard Reduction Program. We doubt a voluntary mitigation plan called for in H.R. 4480 would encourage States and communities to give earthquake mitigation a high priority.

H.R. 4915 does provide the needed linkage in a manner we could support. We have found this linkage effective in the National Flood Insurance Program, where the evidence clearly indicates that the National Flood Insurance Program standards, which are intended to reduce losses to an acceptable level, but not to totally eliminate flood damage works.

I have with me copies of our most recent actuarial analysis on the National Flood Insurance Program Insurance experience. Of particular importance would be the description of the actuarial principles underlying rates, and the insurance rate-making techniques used, which is a combination of actual insurance experience and physical science data.

Also of significance is the insurance experience exhibits, particularly Exhibit B4, which shows the significant difference in claim frequency between unregulated building construction with regard to the flood peril, and building construction after the community adopted the National Flood Insurance Program Management Standards. That exhibit will show that the claim frequency is a ratio of four to one. If you combine that claim frequency with the difference in severity, you have more than a five-time difference between those built under the standards and those built with no regulated standards.

Mr. Chairman, this concludes my oral statements. I would be happy to address any questions.

I would like, also, if the committee wishes, to make available to the committee, copies of our latest actuarial analysis.

[The prepared statement of Mr. Reilly follows:]

STATEMENT OF

FRANCIS V. REILLY

DEPUTY FEDERAL INSURANCE ADMINISTRATOR

FEDERAL EMERGENCY MANAGEMENT AGENCY

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY

HOUSE COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

JULY 26, 1990

Mr. Chairman and distinguished members of the Subcommittee, I am Francis V. Reilly, Deputy Administrator of the Federal Insurance Administration, the directorate within the Federal Emergency Management Agency which administers the National Flood Insurance Program. With me today to assist with any questions which may arise are Gary Johnson, Chief of FEMA's Earthquakes and Natural Hazards Programs Division, and Jim Taylor, the FIA's Assistant Administrator for Insurance Support Services.

I am pleased to appear today to offer comments on the two proposals for establishing an earthquake insurance program at the Federal level, H.R. 4915 and H.R. 4480. The Federal Emergency Management Agency (FEMA) has reviewed these bills from the perspective of the National Earthquake Hazards Reduction Program (NEHRP) and in the context of our experience with flood insurance under the National Flood Insurance Program (NFIP). As you know, FEMA has been for some time, under authorities of both the Flood Disaster Protection Act of 1973 and the Earthquake Hazards Reduction Act of 1977, concerned with examining the desirability of earthquake hazards insurance. In fact, studies were commissioned to examine the need for a Federal earthquake insurance program. These studies were released in 1971, and again in 1981. We concluded from those studies that there was no role for the Federal Government unless the private sector and the States determined that the potential liability was beyond their ability to handle, and they sought Federal assistance.

Since then earthquake insurance has also been examined by the Congressional Research Service and reported to the Senate Committee on Commerce, Science and Transportation Subcommittee in 1987. Earthquake insurance also has been

extensively studied by the private insurance industry because of their concerns on adequacy of coverage, lack of capacity and potential financial disaster facing insurers. These studies have raised as many questions and concerns as they have answered. FEMA is currently conducting a study on the mitigation aspects of earthquake insurance, and I'll discuss that in more detail a little further on.

Over the past 4 to 5 years, there has been a growing interest in and concern about earthquake insurance. This can be attributed, we believe, to two factors:

- there is the expectation that hazard insurance can precipitate the implementation of hazard mitigation techniques if rates are risk based and other forms of relief are not available. Accelerating the pace of mitigation within the NEHRP is a theme that has permeated much of the recent Congressional oversight of this program; and

- there is a general apprehension that the Nation's economy will not fully withstand, economically, the catastrophic earthquake, which is predicted to occur with a better than 50 percent probability within the next 30 years.

The series of moderate earthquakes in the United States in the last decade and the high resulting economic losses, and, in particular, the Loma Prieta earthquake of 1989 has heightened interest in earthquake insurance. The devastating earthquakes in Soviet Armenia and Iran, and even more recently in the Philippines, illustrate the scale of personal and economic destruction that

could occur in our own country.

Recent reviews of the earthquake insurance issue by the Expert Review Committee of NEHRP in 1987 and by a NEHRP Policy Workshop last May have highlighted the need for reexamination of the need for Federal involvement with the private insurers in earthquake insurance.

Anticipating Congressional interest in a national earthquake insurance program and knowing that loss-reduction measures must play an important part in any such program, FEMA initiated in 1988 a study, entitled "Loss Reduction Provisions of a Federal Earthquake Insurance Program", designed to identify cost-effective and practical land-use and building practices for loss reduction that could be incorporated into such a national program. It is not a study of the need for, or the overall feasibility of such an insurance program, but focusses on only one important aspect - which is the property loss-reduction measures that can be applied by State and local governments, the private sector and homeowners.

The present draft of the study identifies fifteen specific land use and building practice measures that may be acceptable for inclusion in a Federal earthquake insurance program. Further, it suggests that current earthquake risk analysis techniques, in spite of their uncertainties, are acceptable for the evaluation of which measures can be used in various seismic hazard regions of the country. These loss reduction measures could be included in a Federal insurance program through earthquake ordinances for State and local governments adoption and enforcement, and through a system of partially risk-based rates that provide financial incentives for adoption and enforcement of earthquake ordinances.

FEMA, in addition to this current study, has also established a subcommittee on earthquake insurance to the NEHRP's Interagency Coordinating Committee. This subcommittee, which is chaired by Jim Taylor, provides the four principal NEHRP Federal Agency's with an effective forum for coordinating their actions relative to earthquake insurance, sharing information on developments related to this area, and also gives us an operative means for liaison with the insurance industry.

I know that your subcommittee wants to know whether the NFIP is a good model for earthquake insurance. From the point of view of its flood plain management program, it certainly is a good model of the potential impact the availability of insurance can have on the willingness of local communities to adopt better land use and building code standards. Its effectiveness results from the close integration of the loss reduction requirements to the hazard mapping and the insurance aspects of the program. The focus on the State and local governments as the principal actor in loss reduction is appropriate for earthquakes as well as floods, with the Federal Government providing minimum loss-reduction requirements and strong technical assistance. We believe that a successful earthquake mitigation program would give greater emphasis to the use of building practice measures over the land use measures as are predominant in the NFIP. Our technical and legal experience with both the land use and building measures in the NFIP have substantiated their effectiveness and legality.

The Congress should also be aware, however, of the problems which face the National Flood Insurance Program. While new construction is risk rated, the

program is statutorily required to subsidize existing construction. This subsidized rate is currently approximately 33 percent of the full risk premium. In addtiion, lack of adequate enforcement of the mandatory purchase requirement has hampered the program's growth and increased adverse selection.

In addition, let me point out a key distinction between flood and earthquake insurance. There is virtually no private flood insurance. The NFIP was created in response to this problem. There is private earthquake insurance. We believe that it is important to clarify what public policy purpose would be or should be served before new programs are initiated.

At this point, Mr. Chairman, the Administration opposes enactment of both H.R 4480 and H.R. 4915 in their current form. Our review of the bills has been governed by the following general principles which the Administration believes must be met by any proposal for a Federal earthquake insurance program:

1. Correction of a market failure: The rationale for the proposal must be to correct a market failure, arising from the inherently unpredictable nature of a catastrophic earthquake, not to provide new Federal insurance subsidies. It is not clear that there has been a market failure. Private earthquake insurance is available. In addition, private insurers are currently providing coverage for other types of losses that would be covered under the reinsurance provisions of both H.R. 4480 and H.R. 4915. The existence of a market failure, if any, and its extent needs to be closely examined before appropriate remedies can be designed.

2. Actuarial fairness: The proposal must utilize a rate structure that reflects the level of risk facing the insured policyholder. Except for practical administrative constraints, policyholders in lower risk areas should not be required to subsidize those in higher risk areas. H.R. 4915 provides for a subsidized rate, and H.R. 4480 does not specifically prescribe risk based premium.

   Also, we do not agree with the provision of H.R. 4915 that requires actuarial rate schedule to be subject to the proposed rulemaking process.

3. Hazard mitigation: The proposal must include provisions requiring participating States and communities to adopt appropriate land use and building code policies that will reduce the risk of loss of life and damage to property. These provision will overcome the "moral hazard" problem of a proposal that shifts a large measure of financial risk to the Federal Government.

4. Federal oversight and control: The proposal must allow for Federal oversight and control of any funds collected and of the operation and management of the program(s). H.R. 4915 definitely meets this criteria. H.R. 4480 appears to meet the requirement, however its proponents should clarify this issue.

5. Deficit neutrality: Over time, the proposal must be designed to be deficit neutral. The statutory language in H.R. 4915 would permit significant subsidy for existing construction and therefore does not meet this criteria. H.R. 4480 has as its objective deficit neutrality, although

this may require a long period of time to achieve.

6. Risk Sharing: There must be legitimate risk sharing on the part of the private insurance industry. Both bills indicate risk sharing, however we cannot at this time comment on the appropriate levels for a Federal program.

Since neither bill satisfies these six general principles, we oppose their enactment. Given the significant budget threats that can result from Federal programs involving contingent liabilities (the Federal deposit insurance program problems are the most prominent example), any proposal for new Federal insurance must be viewed with extreme caution.

You also requested that we address the issue of whether hidden benefits would be provided to the insurance industry by either bill. While we have not conducted a detailed enough analysis of the provisions to directly answer your question, it is important to note that the bills, through their reinsurance provisions, would provide an explicit transfer of liability currently being underwritten by the industry through other lines of business than earthquake insurance. Secondly, the private industry does provide earthquake insurance to homeowners. It is not evident that we need to displace their participation in this market. In short, if the insurance industry perceives problems associated with the potential threat of a catastrophic earthquake, there may be other ways to address the needs besides creating a new Federal insurance program and accepting additional contingent liabilities.

In addition to the above minimum requirements, our review of both bills included an examination of provisions which would advance the goals and objectives Congress intended for NEHRP, as well as our 21 years experience administering the National Flood Insurance Program. These comments follow.

Any Federal involvement in earthquake insurance should avoid the expropriation of normal insurance regulatory powers exercised by the States. This criterion is met by both bills.

H.R. 4915 also includes some specific mitigation measures which have been identified in the aforementioned draft study being completed for FEMA. We believe that elements of this study could provide a foundation for the requirement included in the bill to develop comprehensive mitigation criteria. We note that enforcement of mitigation measures, which we believe would be necessary to have an effective program, is also present.

H.R. 4480 calls for the development of a mitigation plan to be submitted for adoption to the Congress, relevant organizations, State and local governments. There is no linkage between the availability of earthquake insurance with a requirement for the adoption and enforcement of mitigation measures. This linkage has been demonstrated to be an effective basis for the adoption of mitigation measures. The availability of insurance coupled with financial sanctions on a community for failing to require and enforce mitigation has been shown in the NFIP to provide powerful leverage in achieving hazards mitigation in the United States. Despite the heightened awareness of the earthquake threat generated under NEHRP, State and local governments do not voluntarily place

earthquake hazard mitigation as a high priority. Consequently, we doubt a voluntary mitigation plan, as called for under H.R. 4480 would be convincing. It should be noted, however, that H.R. 4480 does raise a valid point on the possible assessment of a nominal surcharge on earthquake insurance premiums to finance mitigation programs.

We do not believe that a costly and detailed Federal hazard mapping approach similar to that used in the NFIP would be needed for a national earthquake insurance program. We see the need for mapping of broad, national- scale earthquake prone areas. We believe the current USGS mapping activities are sufficient. H.R. 4915 calls upon FEMA to identify earthquake prone areas or zones and to make this information known. This is a reasonable requirement at the national scale. We do not interpret the identification requirement upon FEMA to be analogous to the requirement for detailed community-scale flood hazard mapping under the NFIP.

We interpret H.R. 4915 to require FEMA to identify broad, national-scale earthquake prone hazard areas and to impose upon State and local government the detailed mapping which may be required to enact more restrictive ordinances for State and local government compliance. This interpretation is based on the language calling for State and local governments to adopt measures that will refine earthquake identification areas done by FEMA. If this interpretation is not in keeping with the sponsors' intent, we would find this provision objectionable.

Under any proposal, the use of the States as the focus for mitigation efforts

should be considered. State level mitigation activity in the form of statutory requirements for building codes, State certification and periodic recertification of building inspectors and assisting in the monitoring of local building activities would likely result in more cost-effective enforcement of program requirements than could be realized in a program whereby the Federal program dealt directly with communities.

The requirement for identification of earthquake prone areas within one year of enactment with all areas completed by three years of enactment is also a reasonable approach in our view. Furthermore H.R. 4915 requires FEMA to incorporate advances in research and refinements in hazard identification designation as they become available and to monitor compliance; we support that approach.

Nevertheless, we would prefer an approach permitting FEMA to use the best practical methods, to encourage and assist in research to improve hazard identification and mitigation methods, to support the efforts of other Federal agencies (i.e. the principal agencies of NEHRP) and to give priority to identification and mitigation studies, and to work with professional organizations and universities.

We have found the linkage between the availability of insurance and mitigation to be effective in the National Flood Insurance Program, where the evidence clearly indicates that the NFIP has significantly reduced the flood loss potential of new construction built in accordance with NFIP standards in the United States. Currently, nearly 18,000 communities participate in the NFIP and

are administering local floodplain management ordinances that meet or exceed NFIP standards. These requirements are intended to protect structures from damages up to the 100 year or base flood. Communities generally meet these standards through the adoption of free standing floodplain management ordinances or the amendment of local zoning or subdivision ordinances or building codes. It is important to note that NFIP criteria are intended to reduce flood damages to an acceptable level and not totally eliminate those damages. Floods greater than the 100 year flood will continue to cause damages even to structures built in accordance with NFIP requirements.

NFIP floodplain management ordinances have proven to be effective in reducing flood damages to new structures. Since the inception of the NFIP, more than 1 million structures have been built that have been subject to local floodplain management ordinances administered by participating communities. Although there are buildings which violate local ordinances or which are granted variances, studies have shown that most structures meet program standards. Post-FIRM structures (those built after the issuance of a Flood Insurance Rate Map for a community) are charged actuarial flood insurance rates. Because the structures meet program building requirements, the resulting premiums are reasonable.

For violations of or variances to these requirements, the premiums are significantly greater, which has proven to be a deterrent to this type of unwise development. One of the significant strengths of the NFIP is that the rating structure and the floodplain management requirements complement and support each other.

The claims history of Post-FIRM structures provides evidence of the effectiveness of the requirements in reducing flood damages. Buildings which pre-date floodplain management requirements (Pre-FIRM buildings) are 3.8 times as likely to file a flood insurance claim as those built after adoption of local ordinances. Post flood damage assessments conducted by FEMA after flood events have consistently demonstrated that NFIP standards do work.

This was again demonstrated by Hurricane Hugo where structures built in accordance with NFIP standards sustained significantly less damage than nearby structures which pre-dated the program. In Cities Under Water Raymond J. Burby estimates that in 10 sample communities over a 10-year period floodplain regulations diverted 78 percent of residential development that would otherwise have occurred away from floodplains. This same study estimates that over that 10-year period average annual flood damages have increased only by 4 percent, while in the absence of these regulations the increase in these damages would have been 65 percent. In addition, approximately 96 percent of the structures which have had repetitive losses are Pre-FIRM.

The NFIP has paid approximately $3 billion in flood insurance claims since 1978, funded largely from premium income. In the absence of the NFIP a substantial portion of this $3 billion would have been paid out through disaster assistance program Individual and Family Grants, Temporary Housing, SBA loans, or deducted as a casualty loss for Federal and State income taxes, without the offsetting receipt of premium income. The floodplain management requirements themselves have also resulted in savings in these areas since individuals residing in buildings built to program standards are unlikely to require any form of disaster assistance or sustain flood losses except due to the largest floods.

There is also no doubt that a reduction of loss of life due to the implementation of local floodplain management regulations. However, since most flood deaths occur in automobiles or outside of buildings, or are due to catastrophic events such as dam failures or flash floods from extreme storms, this reduction is not as significant as the overall reduction of property damages.

Mr. Chairman, that concludes my statement. I will be happy to address any questions which you or the other members of the subcommittee may have.

Mr. VALENTINE. I was just going to ask you if you could do that, Mr. Reilly, and we will receive those analyses and reports for the benefit of the committee.

Mr. Campbell, do you have any questions?

Mr. CAMPBELL. I have just one. Thank you, Mr. Chairman.

I want to just say for the record, I applaud your leadership on this issue. You have really been very, very farsighted.

A question to you, Mr. Reilly. In dealing with market failure, I didn't fully comprehend the concept of a single disaster of cataclysmic proportions in 8.0 and 8.5, which is statistically within the realm of possibility.

I have heard it said that that would exhaust the available insurance pool. That would strike me as a market failure, and I wondered if you would comment about the absence of proof of market failure, anticipated in earthquake of that magnitude?

Mr. REILLY. Yes. I would like to clarify that for you in terms of the principle we applied. The National Flood Insurance Program was formed because there was virtually an absence of flood insurance availability in the private sector. It has not reached that point yet.

Also, when we deal with some of the critical States, we have not been sought to provide relief by those State Governments and, as you know, our position has been, in administering the National Flood Insurance Program, to defer the regulation of insurance to the States, which is the current law. So I think the finding of the need by the States would be another important element in determining the critical nature of any market failure.

Mr. CAMPBELL. Then I suspect we will end up agreeing, but, for the sake of clarity, let me put it to you this way. Do you agree, then, that an earthquake of that kind of magnitude may well exhaust private markets, either insurance pools or reinsurance pools, so as to create what you and I would call market failure?

Mr. REILLY. From authoritative writings that I have reviewed, there seems to be no doubt that there would be a severe financial impact, not only on the insurance industry, but it would extend across the Nation in terms of the ability of the insurance industry to move massive funds to meet the recovery requirements under existing liability and property damage contracts.

Mr. CAMPBELL. Thank you. And in concern of the secondary insurance, or the reinsurance, the super coverage for the disaster, it's my understanding that a disaster of an 8.0, 8.5 would deplete those resources, making the reinsurers not financially responsible, with cataclysmic results then cascading into other forms of casualty insurance. Does this comport with your estimates as well?

Mr. REILLY. I haven't made any personal estimates, but, again, reading of other authoritative documents, there seems to be no doubt that it would have a severe impact, and possibly long-term on the availability of reinsurance for other lines of business.

Mr. CAMPBELL. I had only one other line of inquiry, and that is the assessment of an earthquake prone area and the appropriate mitigation that we might condition any such insurance upon. It seems to me there should be—I'll make this statement and then allow you to comment on it, rather than to foist up some way to make it into a question—It seems to me that we ought to have the

same agency that decides the insurance question, also decide the necessary mitigation question.

In the flood area, what I've encountered is, as long as the Army Corps is determining what is a floodplain, a flood zone, and FEMA enforces the Stafford Act, you run the problem of the Army Corps saying, "This is a floodplain," even though it's not going to be high on our list for building any protection against a flood, because it really is a once in a century flood; and then FEMA coming along and saying, "Well, sorry, under the Stafford Act, we have to defer to the Army Corps."

That possible conflict, or lack of synergy, I have observed in my own District, Palo Alto, California, on this question, so I would suggest that this may be an appropriate thing to anticipate when we move into the earthquake area.

And now I'd be happy to hear your response.

Mr. REILLY. I would agree, from a management point of view, the statutes should not direct the Executive Branch on how the accountability and management efficiency should be obtained. From my own personal experience with the National Flood Insurance Program, FEMA did try, for several years, in splitting the management of the floodplain management component of the program, separate from the insurance program. It found that it did run into the problems, the priority of goals, objectives, and the resource allocation problems when you split management and accountability. So I would suggest that that should be left to an Executive Branch decision rather than a statutory mandate.

Mr. CAMPBELL. That may be a very good suggestion. I will be in further touch with you on that issue. And I would just like to conclude with the statement that it's really quite popular in the aftermath of an earthquake, such as we had in Loma Prieta, which is in my district, to criticize FEMA. Indeed, it seems to be a cottage industry.

I just want to say for the record, in my observation, particularly in the immediate aftermath, FEMA did a very commendable job. You were very quick in setting up your disaster assistance centers. You've always been very responsive to inquiries from me and other elected officials, and you did that, even though you were strapped, just having had the hurricane in South Carolina.

So, for this Congressman, let me end with a note of affirmation and appreciation for what FEMA did for us after the Loma Prieta Quake.

Mr. REILLY. As a career Federal employee, I am pleased that you have made such a comment. I think FEMA was extremely strained. There are obviously areas where communication and education on the appropriate roles of State, local, and Federal Government is required, and I don't think it serves anybody's purpose to FEMA-bash.

Mr. BROWN. Thank you very much.

The young lady from Maryland.

Ms. MORELLA. Thank you, Mr. Chairman. And you did it all without an administrator, and I do commend you on that, too.

I'm curious about, do we have any well developed recommendations that can be used for mitigation measures?

Mr. REILLY. I would like to defer that question to my colleagues here who have been actively involved with the studies in that regard.

Ms. MORELLA. And I am also interested in. Have you worked with agencies with this? Thank you.

Mr. REILLY. Gary, would you like to?

Mr. JOHNSON. Certainly, Frank.

Ms. Morella, in an anticipation of this concern for mitigation being linked to an insurance program, FEMA did undertake and has undertaken a study to identify feasible lost reduction measures that could be incorporated into a Federal insurance program. We do have the draft final study on that particular issue, and the study found, and has made recommendations, 15 of which are regarded as feasible lost reduction measures. I think it might be appropriate for me just to highlight a few of them.

With The Chairman's permission, I'd like to enter that table into the record from our draft study.

Mr. BROWN. The Chairman would solicit your doing that, and we'll look forward to receiving the full report when it's completed.

[The table follows:]

LOSS-REDUCTION PROVISIONS OF A FEDERAL EARTHQUAKE INSURANCE PROGRAM

Final Report

DRAFT

Prepared for

The Federal Emergency Management Agency (FEMA)

Under
Contract No. EMW-88-C-2872

by

DAMES & MOORE
911 Wilshire Boulevard
Suite 700
Los Angeles, Ca 90017

June 29, 1990

Table 1
Loss-Reduction Measures Recommended for
a National Earthquake Insurance Program

Landuse LRMs (Applicable only in seismic zones 3 and 4)

New Development

LRM 1 Require in high liquefaction susceptible zones that geotechnical techniques be used to minimize potential ground failures for

- o new commercial, public, and residential subdivision development and
- o major modifications of commercial, public and residential subdivision development. (Exceptions of scattered construction of single-family dwellings may be considered in legal and administrative versions of this loss-reduction measure.)

LRM 2 Use zoning ordinances, subdivision ordinances, and other techniques to control new development in active fault zones, high site-amplification, landslide and liquefaction susceptible zones.

Existing Development

LRM 3 Permit reconstruction or replacement of existing development in areas identified as active fault zones, high landslide, or liquefaction susceptible zones experiencing damage of more than 50% of replacement value only if the identified risk is reduced to an acceptable level. Consider purchase of existing damaged properties in high landslide susceptible zones unless suitable measures are used to protect existing development from damage.

LRM 4 Proscribe additions to buildings in areas identified as active fault zones, high landslide or liquefaction susceptible zones unless the risks are reduced to an acceptable level, except additions to single-family dwellings up to 50% of the replacement cost, which can be made without such risk reduction.

Building Practice LRMs

New Construction

LRM 5 Eastern model codes shall be encouraged to incorporate (adopt by transcription) the latest version of the NEHRP seismic provisions. All model codes should incorporate a geotechnical component that considers local site amplification effects on strong ground motion and minimization of potential ground failure effects.

LRM 6 Building regulatory authorities should adopt and enforce model codes that have adequate seismic provisions for buildings including one- and two-family dwellings and anchorage of mobile homes. The building code should apply also to repairs of earthquake-damaged buildings to assure that losses are not repeated in subsequent earthquakes.

Table 1 (Continuation)

New Construction (Continued)

LRM 7 In seismic zones 2, 3, and 4, new essential buildings and public schools, including colleges and universities, should be designed in conformance with current model code seismic provisions.

LRM 8 In seismic zones currently designated 2 with high seismic catastrophic loss potential (designated 2*) model codes should require the detailing requirements applied to zones of high seismicity.

LRM 9 For new construction in seismic zones 3 and 4, a building "hazard rating" must be disclosed to potential buyers well before the close of escrow.

Existing Construction

LRM 10 In seismic zone 4, local jurisdictions should institute ordinances with requirements for seismic retrofit of unreinforced masonry (URM) bearing wall buildings. These buildings should be required to be upgraded to a minimum level or else demolished within a 20-year period.

LRM 11 In seismic zone 4, local jurisdictions should institute ordinances for the securing/strengthening of building parapets and external ornamentation within a 20-year period.

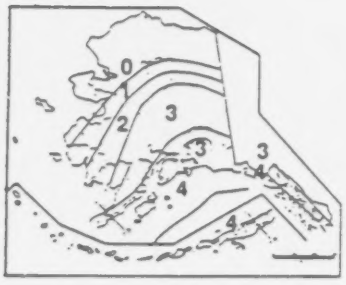
LRM 12 In seismic zone 4, potentially hazardous (other than URM) essential buildings and public schools, including colleges and universities, must be retrofitted or phased out within a 20-year period.

LRM 13 In seismic zones 3 and 4, inspections of buildings including one- and two-family dwellings and anchorage of mobile homes should be performed prior to significant financial commitment or property transfer and hence well before the close of escrow. A report to the potential buyer should indicate whether or not

a. the dwelling is anchored to the foundation,
b. unbraced cripple walls are present, and
c. gas water heaters (if present) are adequately braced or strapped to the framing.

LRM 14 In seismic zone 4, state law should require that gas water heaters in multi-family dwellings (new and existing) be braced or strapped to structural framing.

LRM 15 In seismic zone 4, concrete tilt-up construction which does not have adequate roof-to-wall anchors and continuity ties shall be required to be retrofitted within 10 years.



* EXPLANATION

For Adapting Figure C-1, We Have Used the Following Relationships Between Seismic Zones and Peak Horizontal Ground Accelerations:

Seismic Zone	Peak Ground Acceleration (Percentage of Gravity)	Shaking Hazard Level
0	< 0.05	Lowest
1	≥ 0.05 and < 0.1	
2	≥ 0.1 and < 0.2	
3	≥ 0.2 and <0.4	
4	≥ 0.4	Highest

Figure 1. Illustrative Seismic Zone Map for the United States
(Adapted * from "NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings," FEMA Publication 18 by the Building Seismic Safety Advisory Council, 1988)

Mr. JOHNSON. We'll be happy to do that, and we anticipate that the report—full report will be available in its final form in about a month-and-a-half.

So let me go back to what this report has found and is recommending to us, Ms. Morella.

It breaks down the lost reduction measures to 15 in the two areas, four of which relate to land use measures, and the remaining 11, which relate to building practices. They also associate these practices with either new buildings, new construction, or the problem of existing construction.

With respect to the land use loss reduction measures for new development, the report suggests that zoning ordinances be considered to control new development in areas of land slides, liquefaction, and ground failure areas.

With respect to existing development, the report, for example, suggests that the purchase of existing damaged properties in high land slides susceptibility zones be considered if measures cannot be found to a more—to improve or protect these particular buildings.

With respect to building practices—and this is an area that I'm a little bit more personally familiar with—actually, the report confirms some of the activities that we've been doing under the National Earthquake Hazard Reduction Program, and recommends with respect to new construction that the model codes in the Eastern United States—that's the predominately the BOCA Code and the Southern Standard Code—adopt our—I'll call them ours—the NEHRP's Recommended Provisions for New Development, and to be incorporated into these model codes. I might add that we are presently under the NEHRP, working with these model code organizations to do just that right now.

With respect to existing construction, the report makes a number of suggestions. And I know this is a concern by not only from our standpoint and the NEHRP, because of the potential for loss of life, but also from the insurance industry due to the exposure that's present, with our existing building stock. The report suggests that, in high seismic zones, local jurisdictions should institute ordinances to require a retrofit for unreinforced masonry buildings. You heard Congresswoman Pelosi discuss that particular matter earlier.

They also suggest that on high seismic zones, local jurisdictions institute ordinances to deal with and strengthen parapets and ornamental type things that are on buildings that often come down during earthquake-shaking.

Also, another suggested requirement for existing buildings is that the States require gas water heaters, and so forth, and that multi-family buildings be strapped to structural framing.

That's kind of a highlight of some of the 15 measures that this report has recommended.

By and large what the report is recommending is really that state of the art loss reduction measures that the National Earthquake Hazard Reduction Program is presently developing, either for new construction or existing buildings.

Now you asked with respect how we work with other agencies, and how these are developed. That was your next question.

Under the National Earthquake Hazard Reduction Program, I believe you are familiar that we do have four agencies— principal

agencies—that work together on this problem, and we have been working very, very closely with the National Institute of Science and Technology as well as the National Science Foundation. The former provides the technical support and development of building standards and criteria. The latter provides the necessary research upon which then FEMA works with the Building Seismic Safety Council to translate this research into practical, useful loss reduction measures.

Ms. MORELLA. Mr. Chairman, I got such a great answer, I'm going to yield back the balance of whatever time there may be, and thank you.

Mr. BROWN. Of course, you only get great answers when you ask great questions.

Mr. Reilly, just a couple of questions. Do you believe that there is a strong probability that there would be adequate mitigation measures adopted on a national basis absent some Federal insurance or other Federal push, or mandate, in some fashion or other?

Mr. REILLY. From my personal experience, I think that you would need some kind of Federal-National leverage, such as insurance, combining it with sanctions, other financial sanctions, for not complying to standards, to get the States and the communities to give it a high priority so that it would happen. I think everybody supports the concepts individually, but to get the local and State Governments to move in that direction, I think you need a catalyst, such as a Federal insurance program coupled with other financial sanctions.

Mr. BROWN. Going back to the flood insurance program for a moment, what was the rationale behind the 1973 Flood Disaster Protection Act, and how did this affect the operation of the National Flood Insurance Program?

Mr. REILLY. It was extremely important, and you might ask George Bernstein to correct all the errors I make, but, basically, in the early part of the program, although we were developing the science and technology to address the risk identification and the response in terms of performance standards on land use and building, we had very few communities participate, and we had very few property owners purchase the insurance, because it was pretty much a voluntary approach.

The 1973 Act, combining insurance availability and Federal financial sanctions for not participating, really spurred the program, (1) To a very high level of community participation, so the land use was put in effect.

So, in spite of our low market penetration, we've got demonstrated evidence that the mitigation aspects were being adopted and enforced.

The failure has been really reaching out to the public, and through the mandatory purchase requirement, and our Oversight Committees are addressing those issues now, looking for feasible ways in which the mandatory purchase requirement might be strengthened.

I think you also have an opportunity, if you go into an earthquake program, to repair what I personally think is one of the weaknesses of the Flood Insurance Program. And that is, start up front with State involvement in the area of getting communities to

adopt appropriate mitigation, and assisting the Federal Government in the education and oversight of the enforcement, so that the Federal Government has as an ally, in seeing that things are adopted and carried out by State Governments.

We've had to build in 1978 and 1979 a State capacity to do that. It still isn't nationwide. We have maybe about 42 States that have qualified people who do provide us great assistance in this area, but it's still not nationwide, and it still requires constant attention because there's no State obligation to remain in that business.

Mr. BROWN. Of course, the reason I asked the question was for the specific purpose of getting you to explain how we might benefit from the flood program in terms of any potential earthquake program, and you have responded to that without my asking.

Do you have anything further as to how we may benefit in the earthquake insurance area from what we've learned from the Flood Insurance Program?

Mr. REILLY. I would like to make a comment that the Flood Insurance Program, as it has been structured since 1983, the Federal Government has found invaluable the expertise and the infrastructure that the private insurance industry has. I doubt if any successful program could be implemented without the Federal Government being able to tap that infrastructure, and receive the kind of support we have received in the flood program from their experts in the area of lost reduction, how to sell policies, how to write policies, things of that nature.

The Federal Government, as big as it is, doesn't really have the right structure to handle that insurance program on its own.

Mr. BROWN. We've found from long experience that the Federal Government does have certain weaknesses, and this may be indicative.

Mr. REILLY. There is one other point, my colleague. We have made an interpretation of your bill, sir, that the mapping would not require the detailed study that we are engaged in in the flood program, but that we'd use some broad-based mapping approach that may already be in existence. For example, four zone approach, which is in some of the seismological analysis being done; then rely on communities and States to provide the refinement.

We interpret your bill as that being the intent, because it would be extremely important financially if it was implied that the Federal Government would have to do detailed local studies of all the geophysical characteristics.

Mr. BROWN. I'm glad that you brought that point out, but may I assure you that if you hadn't, we would have brought it out in questioning of additional witnesses, in the light of statements that have been made about the extensive cost of that particular requirement.

I had another question on the top of my mind, but it's temporarily slipped off. Let me—I'm going to try and speed this process up a little bit, and if we—and we need the answers to some additional questions, but I will submit them to you in writing, if I may. And I do want to say that I appreciate your testimony and the additional material that you are going to submit. This is directly in line with what the committee is looking for, and we very much appreciate

your providing it to us as soon as it's in shape to present to the committee.

With that, I have no further questions, and we'll excuse you at this point.

Thank you very much.

Mr. REILLY. I have the actuarial analysis right here.

Mr. BROWN. Yes.

Mr. BROWN. Our next panel will consist of Mr. Franklin W. Nutter, Chairman of the Earthquake Project and President of the Alliance of American Insurers, who is accompanied by Mr. Billy Manning, a professional engineer and Director of Engineering and Education for the Southern Building Congress International; and then Mr. George Bernstein, who is Chairman of the Expert Review Committee, of the NEHRP Program, and former Federal insurance administrator.

Before—Let's proceed, Mr. Nutter, with your testimony, and then we'll go to Mr. Bernstein.

STATEMENT OF FRANKLIN W. NUTTER, PRESIDENT, ALLIANCE OF AMERICAN INSURERS AND CHAIRMAN, EARTHQUAKE PROJECT; ACCOMPANIED BY: BILLY R. MANNING, P.E., DIRECTOR, ENGINEERING AND EDUCATION, SOUTHERN BUILDING CODE CONGRESS, BIRMINGHAM, ALABAMA

Mr. NUTTER. Thank you very much, Mr. Chairman. I have a complete statement that I will submit for the record, and would only summarize my remarks at this time.

Mr. BROWN. That will be fine, and the full statement will appear in the record.

Mr. NUTTER. I do appreciate you introducing Billy Manning, who is with me today as a technical resource for me and for the committee. He is the Director of Engineering and Education of the Southern Building Code Congress International, in Birmingham, Alabama, and serves on our project's expert panel, giving us advice about the program and the legislation.

The Earthquake Project, Mr. Chairman, is a consortium of insurance companies, reinsurers, insurance agents and related groups. We have, for several years now, pursued the goals of providing available and affordable earthquake coverage, because of the concerns we have about the national economy in the event of a catastrophic earthquake. We also seek to provide a means through the insurance mechanism, of reducing losses, and minimizing loss of lives and property in the event of an earthquake.

We commend your legislation and that of Congressmen Swift and Dreier in bringing attention to this issue, and bringing the Congress into the debate about what needs to be done in providing a safety net for homeowners and for the national economy, and dealing with mitigation of losses associated with an earthquake. They are thoughtful contributions to the dialogue.

There are many similarities in these bills, as you well know. And while I would be inclined to spend some time about those similarities, I realize the committee is particularly interested in the issue of mitigation where there is a different approach being suggested in the Swift-Dreier Bill from that of your own legislation.

I do want to say at the outset that there is no dispute, at least on our part, with regard to the importance of mitigation measures in reducing loss of lives and properties as a result of an earthquake. Our industry is proud of the contributions it has made in loss mitigation, in safety and loss control over the years. This is another area where we do intend to make quite a contribution.

I should also say as I have testified on other occasions that our project will not support legislation, Federal legislation, unless it contains enforceable, achievable mitigation measures.

We have stated a preference for H.R. 4480, the Swift-Dreier Bill. That bill, as you know, does provide for the development of national seismic standards and national building codes as examples of leadership that the Federal Government can provide to local communities and States. It suggests an approach of building a consensus, a partnership, if you will, between Federal officials, State and local officials, and the private sector, in responding to the earthquake risk.

It also suggests the use of insurance to provide incentives for mitigation of loss.

Lastly—it suggests a surcharge be applied to the premiums for research with respect to seismic risk and what should be done.

We have a concern, however, about the approach reflected in your bill, Mr. Chairman. We are concerned with the mandatory feature that ties closely the insurance coverage and mitigation measures, and fear that that tie may be counterproductive in achieving either insurance or mitigation.

Clearly, communities that do not adopt the standards being suggested will have no insurance, will have no mitigation, and they will not contribute to the build up of reserve funds which are necessary to help alleviate the Federal Government of the contingent liability it has for disaster assistance. We are concerned that the adoption of the approach taken by the National Flood Insurance Program will result in only a few high hazard communities adopting these standards. Only in those areas, you will have insurance, and mitigation measures.

But too many other communities that are at risk of earthquake, or where we are not sure whether they are at risk of earthquake, will not have the benefit of either mitigation or insurance.

The committee has asked us to address several questions, and I would like to comment at this time.

The concern expressed, and it is our concern as well, is will the insurance availability reduce the value or the importance of mitigation in the minds of homeowners or community officials?

Clearly, the Swift-Dreier approach is designed to provide near universal earthquake coverage for homeowners. Clearly, there are incentives built into that insurance coverage, through the deductibles and the premiums, to provide for mitigation.

We think, and this may be counterintuitive to those of you who have sought a different approach, that indeed the automatic purchase requirement, by providing earthquake coverage on the homeowner's policy, may accentuate the economic incentives for mitigation measures.

There is no question about the value of mitigation. The issue is what is the best approach to achieve mitigation? The insurance

function does achieve the reduction of disaster assistance, and it offers the opportunity for incentives to local officials, and certainly homeowners and small businesses, to adopt appropriate mitigation standards for themselves.

The question is raised whether or not a reduction in Federal disaster liability can be achieved. The answer is yes, in all of the bills that have been proposed. For both of the bills that you have proposed, and certainly the Swift-Dreier Bill, the whole premise of these pieces of legislation is that, in fact, the insurance coverage will reduce Federal disaster assistance burden. We think that the Swift-Dreier approach is likely to achieve that in to greater degree, because it does provide for broader earthquake insurance coverage to be provided. The more dollars of coverage provided and paid in claims in the event of an earthquake, the greater the reduction in the Federal liability for disaster assistance.

Mr. Chairman, we, in the Earthquake Project, have supported the Swift-Dreier approach, because we think it's a preferable approach, but we also want to advance the cause of mitigation. We have done several things, and I would like to announce today that there are several others that we will do.

We feel it is important to advance the knowledge of the earthquake risk; we feel it's important to advance the understanding of mitigation techniques, and we feel it's important to understand the value, and for communities to understand the value of sound mitigation plans.

First, we have appointed a 17-member committee, a blue- ribbon panel, if you will, of experts. It is chaired by Dr. William Petak, of the University of Southern California. Mr. Manning, who is here with me today, serves on that panel. We have asked these people to meet, to advise us in technical areas, to give us their counsel. There has been no litmus test of whether or not they favor the Swift-Dreier approach, or whatever they favor other approaches to mitigation, but to give us their good counsel. I offer them and make them available at our expense to the committee and its staff for consultation in any area that you deem appropriate in advancing a greater understanding of what best could be done in the mitigation area.

The second thing that we are now prepared to do, and which we think we will advance this effort, is that we are planning now to sponsor a series of workshops throughout the country, in key cities that are at risk from the seismic activity, to define and teach mitigation techniques to local officials, to the media, to the construction industry. We will be seeking local sponsors of those workshops in an effort to advance the understanding of the earthquake risk in those communities, but particularly to understand the need for and the value of mitigation measures— land use planning, zoning, building codes, as well as techniques and construction and retro-fitting that can be done.

Third, we are planning to sponsor several studies, to help advance the understanding of mitigation. The first such study is already committed through the Insurance Research Council, which will undertake a study to measure the costs associated with various mitigation techniques. The goal here is not to discourage mitiga-

tion techniques, but to show that there are mitigation techniques which can be cost-effective for homeowners and businesses.

We also plan to commission a study, designed to be a template, if you will, that can be overlaid on many cities, to look at building codes, to look at zoning ordinances to assess the value of those, and the degree of impact they would have in saving lives and saving properties if those techniques were used. It will enhance, and we think focus, both the public and the media on the value of various building code and mitigation techniques.

And, thirdly, we have asked our expert panel to form a subcommittee that will advise us now on those techniques that can be used by homeowners and businesses to reduce the loss of life or property in the event of an earthquake.

That leads me to the fourth element of this program, public education. We are asking our member companies which insure the vast majority of homeowners in this country, to undertake a project of advising their policy holders in all earthquake prone areas, of various, cost-effective techniques that they can undertake now without regard to Federal legislation or local community standards, and what they can do to minimize loss of life and property. We will be developing booklets and monographs which we will provide to various service clubs and organizations throughout the country, to again advise about the kind of structural or nonstructural things that can be done to minimize the damage of property and loss of life.

We will be further developing teaching guides that can be used for various life line activities—hospitals, schools, emergency centers—so that they, too, can understand what can be done to minimize the potential loss of life and damage in the event of an earthquake. These are all intended as public service activities by our industry and our project to advance an understanding and, in fact, advance the implementation of mitigation techniques.

Lastly, in this new program, we will be asking our member companies to incorporate in their institutional advertising enhancement of the understanding of the earthquake risk and the value of mitigation for local officials and individuals.

We want to work with this committee, and other committees—certainly the Banking Committee—with regard to the Earthquake Insurance legislation, and particularly in the area of mitigation.

We have stated a preference for the Swift-Dreier Bill, but it is only a preference. We recognize the value of a partnership, as Mr. Reilly suggests, between the Federal Government, local officials and the private sector, in achieving proper mitigation members. We are willing to explore other alternatives to that of the Swift-Dreier approach, and we commend this committee and its work for helping us advance the cause of protecting property and protecting lives in this country from this terrible catastrophic risk.

Thank you very much.

[The prepared statement of Mr. Nutter follows:]

Testimony

Franklin W. Nutter
President, Alliance of American Insurers
and Chairman, Earthquake Project

Science, Research, and Technology Subcommittee
Science, Space, and Technology Committee

July 26, 1990

I. INTRODUCTION

Thank you for the opportunity to testify at this morning's important and timely hearing on earthquake hazard mitigation and earthquake insurance legislation.

I am Frank Nutter, Chairman of the Earthquake Project, a consortium of the property-casualty insurance industry, including the major trade associations, agent organizations, and about 300 member companies. We came together almost five years ago to develop forward-looking proposals on earthquake insurance and mitigation measures. Our objectives are three-fold: (1) to provide available and affordable earthquake insurance to all homeowners; (2) to better prepare our national economy for the aftermath of catastrophic earthquakes; and (3) to encourage, through the use of the insurance mechanism, reasonable loss prevention measures aimed at protecting lives and property.

We commend this Subcommittee for holding this hearing and we especially applaud Congressman George Brown for his long-standing and far-sighted leadership on earthquake preparedness issues. As the author of the National Earthquake Hazards Reduction Act, his congressional reputation as "Mr. Earthquake" is certainly well

deserved. This reputation has recently been enhanced with his sponsorship of the National Earthquake Insurance and Reinsurance Act of 1990 (H.R. 4462) and a slightly recasted version of the same bill (H.R. 4915) which has been jointly referred to this Subcommittee. We believe these thoughtful bills make a valuable contribution in advancing the legislative dialogue on earthquake mitigation and insurance issues.

We also wish to recognize the three Members of this Subcommittee who are cosponsors of another piece of similar legislation, the Federal Earthquake Insurance and Reinsurance Act (H.R. 4480), introduced by Congressmen Swift and Dreier in April. Of the twenty-one cosponsors of this bill, the three serving on this subcommittee are Congressman Terry Bruce, Congressman Tom Campbell, and Congressman Sherwood Boehlert, who is also the lead Republican cosponsor of Congressman Brown's bills.

II. EARTHQUAKE INSURANCE & MITIGATION LEGISLATION

All three of these bills address an increasingly serious concern: preparing our country for the inevitability of catastrophic earthquakes. We believe the insurance mechanism is particularly well suited to protect homeowners and to encourage mitigation steps. Congressman Brown's two bills (H.R. 4462 & 4915) and the Swift-Dreier bill (H.R. 4480) recognize this fundamental principle. These bills also share remarkable similarities. For instance, the bills embody the same following policy themes:

- A federal earthquake insurance program should be created which fully recognizes that the earthquake risk is a national problem requiring a national solution.
- The program should involve a partnership between the federal government and the private insurance industry.
- The program should be broadly-based and provide earthquake insurance at affordable rates to most of the nation's homeowners.
- A pre-funded federal insurance program is more efficient and equitable than after-the-fact federal disaster assistance in compensating homeowners following a major earthquake.
- The program should include a "safety-net" to protect the national economy from a truly catastrophic quake by creating an excess reinsurance layer with a protected reserve fund.
- The program should include loss mitigation measures, i.e., preventive efforts which reduce the loss from major earthquakes.

We are extremely encouraged by these similarities because they demonstrate some congressional acceptance of the basic tenets of a federal earthquake insurance and reinsurance program. The Earthquake Project urges this Subcommittee and the Congress to build on these bills' similarities in fashioning legislation.

The similarities of these bills will probably focus the congressional debate on the few differences between the bills. The central difference, as has already been stated throughout this hearing, lies in the means for achieving earthquake loss mitigation. Generally, the Brown bills are based on mandatory federal mitigation — federally imposed building codes and other mitigation measures which must be implemented by the local communities as a precondition to the availability of earthquake insurance. The Swift-Dreier bill is premised on incentive-based mitigation — a model mitigation plan which local communities are encouraged to adopt and reward-based financial incentives to encourage loss mitigation.

III. IMPORTANCE OF MITIGATION

Despite these bills' differences on hazards mitigation, we are encouraged that Congress can resolve this issue in a constructive manner. For while the bills reflect an honest disagreement on the effective means to achieve mitigation, there is no disagreement on the importance of earthquake loss mitigation. Everyone agrees that measures which save lives and reduce the damages from future earthquakes must be encouraged. The insurance industry, in particular, has a rich legacy of leading the way on promoting loss mitigation. Examples include our industry's pioneering and steadfast support for seat belts, air bags, and smoke detectors.

The industry also wants to be on the cutting-edge in developing earthquake loss mitigation measures. Indeed, as I have already testified before Congress, the Earthquake Project will not endorse federal earthquake insurance legislation unless it contains strong mitigation efforts.

We believe that the mitigation provisions of the Swift-Dreier bill will provide meaningful mitigation. Just to review, H.R. 4480 requires the development of a mitigation model plan with national seismic standards, building codes, and earthquake strengthening of older buildings. Within 18 months after enactment, the model plan would be submitted to Congress as well as state and local communities which would all be encouraged to adopt it. The bill also mandates an examination and approval of various reward-based incentives (such as lower deductibles and premiums) to encourage homeowners to take steps to reduce the loss from earthquakes. The incentives apply, for example, if the house meets the relevant building-code and/or passes an earthquake inspection. Finally, the Swift-Dreier bill allows for the assessment of a surcharge which will provide for a self-sustaining fund to pay for additional seismic hazards research and implementation of mitigation efforts.

We support this mitigation approach because it affords broad insurance coverage while promoting a cooperative and consensual program of loss mitigation. Since scientists agree that damaging earthquakes could strike in most every state in the union, achieving near universal insurance protection for homeowners is

an important first priority. Mitigation steps should be taken in conjunction with providing the insurance coverage. Many authorities believe that effective mitigation must involve the active and meaningful participation of local communities. Indeed, cultivating popular support at the state and local level is a necessary step in sustaining any successful mitigation program. The Swift-Dreier bill achieves this objective by actively encouraging mitigation without federally imposing it on reluctant communities.

Many suggest that the National Flood Insurance Program (NFIP) is an example of federally-mandated mitigation that has failed to engender local support. The NFIP has also failed to achieve universal participation as the vast majority of those Americans living in designated flood plains do not have flood insurance. The carving-out of specific flood plains, furthermore, results in adverse selection (providing insurance only in the highest risk areas) with costly premiums being the necessary consequence. We believe that the broad-based and consensual approach of the Swift-Dreier bill cures many of the problems endemic to the flood program by spreading the risk nationwide, lowering premiums, and promoting local cooperation in setting and enforcing mitigation standards.

The flood program, in our view, is simply not the preferred paradigm for an earthquake insurance program. A compulsory link between loss mitigation and insurance (the hallmark of the NFIP and H.R. 4462 & 4915) may be incompatible with making affordable

earthquake insurance universally available. If local communities fail to adopt the federally-imposed mitigation standards or there is substantial delay, earthquake insurance would be unavailable and the reserve funds may not build up in time to cover the "big one". Consequently, one of the purposes of a federal earthquake insurance program — reducing federal disaster assistance — is undercut.

The flood and earthquake perils are fundamentally different. Floods are predictable, recurring, and localized events. Yet the frequency, severity, and location of earthquakes is totally unpredictable. Because of the inherent differences between floods and earthquakes, the existing flood insurance and mitigation program may be an unsuitable model for a federal earthquake insurance and hazards reduction program. While a compulsory mitigation program geared to communities with a heavy concentration of flood plains makes some sense, it is inappropriate for an earthquake insurance program premised on universal application and low premiums. The adverse selection of the flood program allows one to mandate specific and reasonably cost-effective mitigation measures. The universal risk-spreading of the earthquake insurance program, on the other hand, greatly reduces the opportunities for such mandatory loss mitigation.

In short, the flood program concept of federally-imposed mitigation measures, as contained in H.R. 4462 and 4915, may compromise our objectives. First of all, limiting insurance coverage to specific earthquake zones and mandating mitigation

reduces the availability and affordability of earthquake insurance. Second, the lack of a universal program slows the accumulation of the reserve fund from which future losses will be paid and may result in early borrowing from the Treasury. The broad-based, consensual approach of H.R. 4480, on the other hand, satisfies our objectives while offering strong incentives for mitigation.

Finally, we believe that earthquake loss mitigation is an issue of first impression that is particularly well suited for resolution by the committee system. This hearing is an excellent example of Congress working through a new issue by soliciting varied, expert testimony. We believe this tried and true congressional committee hearing and markup process is ultimately the best approach for successfully resolving the mitigation issue.

IV. ADDRESSING THE SUBCOMMITTEE'S QUESTIONS

With this background, let me now address the three specific questions contained in the Chairman's formal invitation letter.

(1) Effect of an insurance purchase requirement on mitigation incentives.

The Swift-Dreier bill requires the purchase of earthquake insurance by those homeowners in earthquake risk states who have a federally-backed or insured mortgage. The legislation also requires insurance companies participating in the insurance and

reinsurance programs to include earthquake coverage in every homeowner's policy they issue. We believe the net result of these two provisions is that earthquake coverage will be folded into the standard insurance policy purchased by most homeowner's which already covers fire, theft, storm, liability, and other perils.

It is difficult to judge how these purchase requirements will affect the incentives for homeowners and local communities to take hazard mitigation steps. We do not believe, however, that purchasing earthquake insurance will frustrate the economic incentives of H.R. 4480 which are intended to encourage mitigation. If anything, the automatic purchase of earthquake insurance may accentuate the incentives. Dr. Robert Litan, a Senior Fellow in Economic Studies at the Brookings Institute, has stated that a mandatory insurance requirement creates more economic incentives for mitigation. Dr. Litan reasons that since most homeowners will be buying earthquake insurance anyway, it makes sense for them (and their local communities) to reduce their deductibles and premiums by taking mitigation steps.

(2) Reducing federal liability for earthquake disaster assistance.

We believe that all three earthquake insurance bills will be effective in reducing the existing federal liability for earthquake disaster assistance. The very premise of a federal earthquake insurance program is ~~to help~~ pre-fund federal disaster

relief. Every homeowner covered with earthquake insurance is one more homeowner who does not need federal assistance in the form of direct grants and loans following an earthquake. Since less than five percent of America's homeowners currently have earthquake insurance, a program providing nearly universal earthquake coverage can substantially back-out disaster assistance.

An estimate of the disaster assistance saved is difficult to predict without knowing exactly what federal disaster relief may be forthcoming following a catastrophic earthquake. However, the 1987 Whittier earthquake, the most recent event for which comprehensive data is available, may provide some guidance. FEMA records indicate that of the roughly $195 million provided in federal assistance following the Whittier quake, about $120 million was related to residential property damage (SBA home loans, temporary housing, and individual and family grants) that would not have been needed if there had been universal earthquake insurance.

The Earthquake Project believes that H.R. 4480 will be more effective than H.R. 4462 and 4915 in reducing the federal liability for earthquake disaster assistance. The universal coverage feature of the Swift-Dreier bill should afford insurance protection for more homeowners (thus reducing federal assistance) than the flood-program approach embraced by Congressman Brown's bills. Under H.R. 4462 and 4915, insurance coverage is not available for those homeowners who live in communities that have

failed to adopt the federally-based mitigation standards. These bills, in addition, deny earthquake insurance for "seismically hazardous structures". The result is that the Brown bills, when compared to the Swift-Dreier bill, will probably result in more homeowners without earthquake insurance who will be relying on federal disaster assistance.

(3) How the mitigation provisions reduce federal earthquake liability and contribute to the insurance program.

The mitigation provisions of all three bills, in our view, contribute to the goal of reducing federal earthquake liability. Obtaining effective loss mitigation obviously saves lives and reduces property damages thereby lessening the federal responsibility to respond with disaster relief. Although we prefer the mitigation requirements of H.R. 4480 as being more achievable, the mitigation provisions of Brown's bills will also substantially reduce the federal earthquake liability. Past experience, however, tells us that provisions in the Brown bills denying federal assistance to communities not adopting federal mitigation standards may go unenforced when faced with a disaster.

The Earthquake Project believes that the Swift-Dreier mitigation provisions better contribute to the long-term viability of a federal earthquake insurance program. As outlined above, the broad-based, consensual approach of H.R. 4480 is consistent with the objective of providing available and

affordable earthquake insurance. The flood-program approach taken by the Brown bills, however, may not be as successful in getting homeowners covered with reasonably-priced insurance, which we regard as critical to the long-term viability of an effective insurance program.

V. INSURANCE INDUSTRY SUPPORT FOR MITIGATION

Let me reaffirm that the Earthquake Project is committed to further advancing earthquake loss mitigation. The Project, for instance, has formed a 17-member blue ribbon panel of experts to make recommendations on appropriate mitigation measures. Dr. William Petak, a Professor at the USC Institute of Safety & Systems Management, is chairman of this mitigation committee. Also attached to my statement is a complete list of this committee's membership. We urge this Subcommittee and others in Congress to use our mitigation committee, as the insurance industry already is, as a technical resource on earthquake hazard reduction issues.

I am pleased that one of the members of this mitigation committee, Dr. Billy R. Manning, has joined me here this morning and is prepared to answer any of your specific technical questions on earthquake mitigation. Dr. Manning, a professional engineer, is Director of Engineering and Education for the Southern Building Code Congress International, Inc.

The insurance industry is also working today to promote earthquake awareness, preparedness, and mitigation efforts. For

example, State Farm Insurance Company is sponsoring a UCLA instructional program to educate school teachers and concerned parents on how to make Los Angeles area schools earthquake-safe. Furthermore, I am announcing today a series of initiatives sponsored by the Earthquake Project and the industry which will enhance public awareness of earthquake mitigation and encourage steps to protect lives and property. We believe these efforts are consistent with the mitigation approach of the Swift-Dreier bill and are a sign of our commitment to be leaders in promoting strong, constructive, and effective mitigation proposals.

VI. CONCLUSION

The Earthquake Project hopes to work closely with Congress on the mitigation issue. We look forward to cooperating with this Subcommittee, Congressman Brown, and others in developing the best achievable earthquake mitigation legislation. While we obviously prefer the approach of the Swift-Dreier bill, we are anxious to explore various mitigation proposals and possible compromise positions. Because we, like everyone else here today, support including the best attainable hazards reduction program in federal earthquake insurance and reinsurance legislation.

Thank you again for the opportunity to testify and Dr. Manning and I are prepared to answer any questions the Subcommittee may have.

THE EARTHQUAKE PROJECT: MITIGATION COMMITTEE

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Mr. BROWN. Thank you very much, Mr. Nutter, for your very constructive testimony. I'll praise it more highly later, but let's go to Mr. Bernstein now.

STATEMENT OF GEORGE K. BERNSTEIN, CHAIRMAN, EXPERT REVIEW COMMITTEE OF THE NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM AND FORMER FEDERAL INSURANCE ADMINISTRATOR

Mr. BERNSTEIN. Thank you, Mr. Chairman.

I would like to state two things at the outset; one, that my comments today are on behalf of me only. I'm not speaking for any client, it's my personal views.

And, secondly, that I draw distinction in much of my criticism of 4480 and its proponents between the insurance industry as a whole and the Earthquake Project.

I'm pleased that this committee is addressing the problem as Congress is today, but that feeling is mitigated in great measure by a certain sadness. It's a sadness at seeing what's happened with the companies who are the proponents of the Earthquake Project Bill.

I have great respect for the role of insurance in our society. I have great trouble with the political attacks on the insurance industry both as company and as an institution that we are seeing an increasing degree in this country today. But I'm saddened, most, by the abandonment of the earthquake project of the basic principles of mitigation that have been the hallmark of the insurance business for so many years.

When it comes to Worker's Compensation, when it comes to automobile insurance, when it comes to fire codes, there it's fine, to ask the Federal Government to force State Governments to enact laws, to force legislation that isn't done voluntarily. When it comes to earthquake, the project has drawn the line. There it's unwilling, and all of a sudden invokes State's rights as a reason for not adopting the principles of 4915.

I'm saddened, also, that the rest of the industry has an opportunity to speak up, and has chosen to remain silent, and let the Earthquake Project carry the day because of a fear of showing any break in industry solidarity. Those who are silent bear a great responsibility for what's going to occur when earthquake mitigation does not occur in this country.

I've given in great detail in my written testimony answers to the specific questions posed to me by the committee. I've addressed the basic differences between the two pieces of legislation, so I'd just like at this time to focus on a couple of basic differences.

Obviously, the key one is mitigation. The industry is in favor of mitigation. We now have a press release that shows the tremendous public interest, efforts of the industry, to educate the public. That's wonderful. I applaud it. It would be nice if it worked, it would be nice if it was a concerted effort, and I'm sure the industry intends to make this educational process a very significant effort. But it won't work. Education will not accomplish mitigation. Education will not overcome the economic interests opposed to mitigation. It didn't work in Flood, and there were industry efforts in Flood as well. It didn't work in Flood, it didn't work in Worker's

Compensation, it doesn't work in automobile insurance, or Detroit would be doing exactly what the industry is trying to force the Federal Government to force Detroit to do. It doesn't work when you're facing economic interest.

The developers, the builders—despite the fact that we're talking about added cost on new construction of one-tenth of one percent to prevent earthquake losses, to the extent humanly possible—the economic interests of developers, and the builders, and the realtors have succeeded in defeating seismic legislation across the country.

Sure, there's a lot of it in some places. California's done a tremendous job, because California has had the repeated example of earthquakes that overcome that economic and political opposition. The rest of the country should, and States have adopted the BOCA Codes. The BOCA Codes don't come up to the standards of the NEHRP Codes, and, while they may be improved, they haven't done it, and those aren't even the key areas of the United States that have the earthquake problem.

New Madrid Fault was ignored until last year by St. Louis, and this year by Memphis, and they adopted respectively the BOCA Code and the SBC, the Southern Building Code, the Standard Building Code, neither of which come up to the NEHRP Standards. But even if those are taken as adequate codes, that's a drop in the bucket. We sit back contentedly and self-satisfiedly, and we look at the tragedies in other parts of the world, and we say to ourselves, it can't happen here, because we build differently. We don't build differently unless those code provisions are in there, and they're not in there in major portions of the United States, where we're going to suffer loss of life, and loss of property, and the Earthquake Project's proposal isn't going to save a single life or a single piece of property.

What will save that property is the Congress of the United States making the hard choice that its going to have to make, that was made in 1973, with respect to the Flood legislation. And that choice is, is earthquake mitigation at a sufficient level of success in this country that we can sit back and watch as it diddles along, as voluntary efforts? And, again, when we hear about the industry bill, they're talking about voluntary and incentive mitigation. I see no incentives in their bill for mitigation.

But, unless the Congress is willing to see the status quo continue, unless it's willing to accept the fact that after 13 years of NEHRP efforts which have failed on a nationwide basis to get significant results in mitigation—not in knowledge; we've gained the knowledge. We just haven't done anything with that knowledge on a broad enough basis. Unless you believe that this list of tea parties and educational projects is going to solve the problem, then you've got to face a tough choice.

Are you going to mandate that before Federal monies go out the door, whether it's in disaster relief or relief for insurance companies, you get some guarantee through future building codes and future zoning laws, mandated in principle, in criteria at the Federal level, but with the details to be worked out at the local level, recognizing local problems, and local uniqueness, unless you're willing to bite that bullet, you're not going to have mitigation, and

you're going to be building a black hole for Federal monies if you adopt the Federal insurance bailout program.

Now the purpose of 4915, which couples both the insurance bailout and the mitigation, answers all of those questions. What happened in 1973 was that Congress appreciated that the Flood Insurance program would never work on the type of voluntary basis that the insurance industry is now recommending for the earthquake—for 4480.

Let me tell you a little story.

In 1971, I had been Federal Insurance Administrator for about two-and-a-half years, and I concluded that Flood Insurance Program would never work. It would never work because communities, despite all of the educational efforts of the insurance industries, in terms of companies, in terms of agents and brokers, who did tremendous jobs in attempting to educate, in respect of educational efforts by members of Congress in flood- prone communities, who would hold meetings, when flood insurance was available, to urge the purchase, and it wasn't purchased, and mitigation, in most communities, would not adopt it, I went to the White House. And I said, "Look, this thing isn't going to work". I said, "You've got a program on the books, but it's nonsense. It's not going to work." And they convened a group of a number of Federal agencies, and we had OMB, and we had Commerce, and we had Treasury, and Justice, and I was on there for HUD, and we endorsed some legislation that I had written, which ultimately became the 1973 Flood Disaster Protection Act. And the White House signed off on that, and it was going to be introduced in the beginning of 1972.

Along about the end of 1971, I got a phone call from the White House, and I was advised that they had second thoughts about this because of the political implications of taking on developers and builders, and there was an election, as we understand, in 1972, and they did not want to take on this issue at this time, but they thought it was a good idea, and maybe they'd do something about it.

Along comes Hurricane Agnes. Almost no insurance coverage in the United States; certainly none in the Susquehanna area— Susquehanna River area; none in the Pennsylvania areas that were badly hit by it, to speak of, piddling amounts.

The next day I got a call from the White House, "Do you still have that bill?" Got the bill out, we had press conferences in Scranton, we had press conferences at the White House. The bill was introduced, and Congress passed it till next year, over the strong opposition of the very people that the insurance industry now tells us we must bow down to—the developers, the builders, and the realtors—because they're going to defeat this legislation.

Well, it took some guts on Congress' part to do that, but that's why the Flood Insurance has worked as well as it's worked. You can criticize anything about the Flood Insurance Program you want to, and it may valid. Maybe it should be done better. But unless you had that mandatory mitigation, which existed until it was—till part of it was taken out in 1977, you wouldn't have the communities in there.

In 1973, when that bill became law, you had something like 2,800 communities in the program. By the time it was watered down a

little bit, a lot, in 1977, you had almost 17,000—you had over 17,000 communities in the program, and today you have about 18,000 communities in the program.

You wouldn't have had those communities in the program, all of whom adopted the loss reduction measures required by the act, reluctantly, involuntarily, and only because of that legislation. You can forget about the Flood Program. It wouldn't have succeeded. If there should be more enforcement today, fine; but if you're comparing what would have been without it, to what we have today, there is no comparison.

So I am saying to the Congress, it must make the hard choice. The insurance requirement provisions of both bills, including your bill, Congressman Brown, your bill, Congressman Boehlert, will not be enough to achieve mitigation. It will do two things.

It will discourage mitigation. Most people don't want to buy insurance. Insurance is shoved down people's throats. It's shoved down their throats in automobile insurance, by financial responsibility law; fire insurance is shoved down their throats by mortgage lenders. We don't buy insurance voluntarily. People don't want to buy flood insurance—earthquake insurance. In California, State law requires that the industry offer it to all homeowners, and only 20 percent buy it in California. What more evidence do you need that people don't buy it voluntarily?

What this will do, if all you have is a requirement for purchase of insurance without a penalty on the denial of loans and mortgages, by federally-insured institutions, unless the community enters a program, if all you have is a requirement for insurance, and that insurance is met if the community comes into the program, you will have more people joining with builders and developers to oppose the mitigation measures, and keep the community out of the program. You must have Section 208 of your bill, which says there are real penalties if a community does not come into the program.

No one likes mandatory mitigation. I'm a Republican. I was a member of the Nixon Administration when we pushed this legislation. We don't like to push that sort of thing down the States' throats, but unless you do it, it won't happen. And if Congress wants to make a choice, the choice is, "Do you want mitigation at the cost of shoving some principles down the throat of locality, which will be enforced differently in different localities, but the criteria must be enforced?" If you want that, you pass the bill. If you want to back off that, you can do anything you want, but forget about mitigation, it won't happen, and then all you've got is a lovely insurance program for the insurance industry.

If that's what Congress wants, that's fine. I don't want it with my taxpaying money, and I don't want it with my policyholding money.

The industry talks about the fact that the Boehlert Bill requires subsidies, and the industry bill doesn't require subsidy. It doesn't require tax subsidies, but it requires cross-subsidization from policyholders throughout the United States with either no risk or minimal risk. That's the guts of building up this fund that the industry's so anxious to build up.

Now if that isn't taxation under another name, I don't know what it is. It's exactly the sort of cross-subsidization that the industry has been going to court on in California and attacking Proposition 103, because that requires cross- subsidization of disparate classes of risk.

The difference in the bill is mitigation. The difference in the funding is a difference that will ultimately come back to taxpayers and policyholders to pay, and there's no real difference. If you want mitigation, it's 4915. If you don't care about it, I suggest there be no legislation at all.

Thank you very much.

[The prepared statement of Mr. Bernstein follows:]

Testimony of

GEORGE K. BERNSTEIN

Chairman of the Expert Review Committee
of The National Earthquake Hazards Reduction Program
and
Former Federal Insurance Administrator

Before the

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

of the

HOUSE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

July 26, 1990

The Subcommittee has requested that as Chairman of the Expert Review Committee of the National Earthquake Hazards Reduction Program, and as former Federal Insurance Administrator, I comment on the earthquake insurance programs proposed in H.R. 4915 and H.R. 4480.

It has been 13 years since Congress enacted The National Earthquake Hazards Reduction Program ("NEHRP"). In terms of actual loss reduction, progress has been disappointing. Although the experience of the San Francisco/Loma Prieta earthquake confirmed that structures conforming to current technology can withstand the effects of even severe earthquakes, few communities in the United States have implemented appropriate code provisions.

There is neither nationwide appreciation of the risks of earthquakes nor the will to enact and enforce the mitigation measures that are necessary to achieve the objectives of NEHRP.

Apparently the evidence from Armenia and Mexico City of what an earthquake can do to poorly constructed buildings and the people in them has been largely forgotten. Even if the recent Iranian and Philippine earthquakes reawaken our concerns, there is little reason, based on past performance, to expect significant hazard mitigation throughout the United States.

If the goals of NEHRP are to be achieved, we must deal with not only the proven reluctance of people to acknowledge and act on the threat of natural disasters with characteristics of high

severity and low frequency, but also the active resistance of certain interests to hazard mitigation. Even in those relatively few areas of the country where mitigation measures have been adopted, people still have a tendency to resist implementation because they cannot accept the likelihood that an earthquake will involve them personally. This too must be addressed.

This is true throughout the nation and no more dramatically than in the central United States, where despite the existence of the New Madrid fault system and the 1811-1812 earthquakes estimated at 8.6 on the Richter scale, there has been little local response in the form of hazard mitigation measures.

Joint federal and state support of planning groups, such as the Central United States Earthquake Consortium ("CUSEC"), which have produced earthquake guidebooks and other planning materials and made them available to local policymakers and planners, has not resulted in commensurate local action.

In Memphis, for example, where the earthquake threat is intensified by the alluvial silt on which the city is built and the liquifaction that can be expected, it was not until this year that the seismic provisions of the the Standard Building Code ("SBC" [often referred to as the Southern Building Code]) were finally adopted. In St. Louis, it wasn't until 1989 that the Building Official and Code Administrators' building code ("BOCA") with seismic provisions was adopted.

Unfortunately, although both the SBC and BOCA are in the process of revision, neither is as complete or up to date as the NEHRP recommended earthquake provisions developed by the Building Seismic Safety Council.

With the general exception of California, and the 10 states that have adopted BOCA, */ the rest of the country has given lip service to the earthquake threat.

One of the reasons is that developers, builders and realtors have opposed the adoption by local communities of loss reduction measures in building codes and zoning ordinances, regardless of how little these measures cost.

In the case of earthquake seismic provisions, where the cost of mitigation is estimated at only an additional two-tenths of one percent of the cost of construction (1% of the cost of structural framing, which, in turn, is only about 20% of the cost of the structure), the failure to enact such hazard reduction measures cannot be justified on either human or economic grounds.

Even when a community takes action with respect to catastrophic natural hazards, the response of individual homeowners lags behind. We have seen this phenomenon in the area of floods, even after Congress made flood insurance available at reasonable prices. We see it in California with respect to earthquakes, where, although local communities have acknowledged the threat by implementing loss reduction activities, and state law requires insurers to offer earthquake insurance to homeowners, only about 20% buy it.

H.R. 4915 offers a real opportunity for implementing and enforcing a national program of earthquake hazard mitigation that would achieve the objectives of NEHRP.

H.R. 4915 also addresses the valid concern of the insurance industry with the impact on our economy of a major

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*/ Connecticut, Kentucky, Massachussets, Michigan, New Jersey, Ohio, Rhode Island, Vermont, Virginia and West Virginia.

earthquake. In addition to loss of life, billions of dollars in property damage would be sustained, with massive destruction of communication, transportation and lifeline systems.

But H.R. 4915, unlike H.R. 4480, does something about reducing that loss of life and destruction.

H.R. 4480, introduced on behalf of the Earthquake Project, may provide a safety net for insurers, but because it requires no hazard mitigation, it will not save a single life nor prevent the loss of a single dollar in property damage. H.R. 4480 will actually increase these losses.

H.R. 4480 would be a bonanza for those insurers without social conscience. But to other insurers, and for those who will pay for the losses that would be prevented if H.R. 4915 were enacted, H.R 4480 is an insurer bail-out, without redeeming public benefit.

In promising that, under H.R. 4480, "even in the highest risk areas" homeowners will be charged only an "average of $50" [Earthquake Project lobbying document], the Project compounds its disdain for mitigation and the ultimate cost to the taxpayer with a cavalier disregard for policyholders in low risk areas, who will subsidize the high risk insureds with their premium dollars.

The Project is apparently willing to use these dollars to cross-subsidize disparate classes of risk, although insurers are the first to condemn such cross-subsidization as social engineering when it is proposed for private insurance, as was the case in California under Proposition 103.

H.R. 4915, incorporating the quid pro quo approach of the 1973 amendments to the National Flood Insurance Program, promises

real benefits to the public in the form of lower losses, in return for federal exposure to additional earthquake liabilities, including those now carried by private insurers.

Unquestionably, earthquake and flood risks are different: in the geographic scope and intensity of the hazards, the ability to pinpoint the areas at risk, the relative loss reduction impact of zoning ordinances versus building codes and the degree of awareness by citizens and officials of both the fact and extent of the dangers. Nevertheless, both risks are susceptible to combinations of insurance type*/ coverage and hazard mitigation and it is possible to develop a sound federal earthquake insurance and reinsurance program by drawing on principles of the National Flood Insurance Program.

Under the flood insurance program, over $190 billion in insurance protection now covers more than 2,300,000 policyholders. Almost 18,000 communities have entered the program by adopting zoning laws and building codes assuring that new development will be safer and more wisely located than previously. More than one million structures have been built subject to local floodplain ordinances mandated by the federal program.

But until the enactment in 1973 of federally mandated flood mitigation measures like those contained in H.R. 4915, only 2800 communities had entered the program. The vast majority of flood prone communities were unable or unwilling to adopt necessary hazard mitigation measures over the opposition of developers, builders and realtors.

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*/ No program that requires substantial premium subsidies is a true "insurance" program. The less that the subsidies reflect risk characteristics, the less the program is "insurance".

It was only the mandated mitigation provisions of the 1973 Flood Disaster Protection Act that prevented the failure of the flood insurance program and truly began to achieve the purpose of the original 1968 legislation.

The reduction of flood losses that are compensated either through insurance or disaster relief will continue to be gradual, but the eventual impact on the lives and pocketbooks of Americans will be significant because of the enactment of hazard mitigation measures in flood prone communities across the United States.

If we have learned anything since the 1977 NEHRP legislation, it is that local communities are as unlikely to respond spontaneously to the earthquake threat as they were to the threat from floods.

Recent gains in earthquake technology are significant, but, generally, only where earthquakes have already occurred have communities acted to use these tools. Too often, even in these communities, there has been inadequate enforcement with respect to known hazardous structures as memories of the disaster quickly faded.

Executive Order 12699, signed by the President on January 5, 1990, will force federal agencies to develop construction and assistance policies to reflect the earthquake hazard, but it will have no effect on existing structures or lifelines or on state and local construction, and will have very limited impact on new private construction.

What is necessary is legislation that creates incentives and gives states, localities and individuals the will to require that new construction is built in recognition of the earthquake hazard, that excessively dangerous existing structures are retrofitted and that lifelines are secured.

The Subcommittee asked me to address three questions: */

QUESTION 1. What effect does the requirement to purchase federal earthquake insurance have on homeowner and community incentives to adopt earthquake hazard mitigation programs?

ANSWER. NONE -- unless there is a precondition, such as §208 of H.R. 4915, that limits assistance and loans if communities fail to adopt hazard mitigation measures required for participation in the program.

As far as communities are concerned, the current opposition to the adoption of earthquake hazard mitigation measures will continue to prevail, absent direct and compelling economic incentives for loss reduction.

H.R. 4480 provides no such incentives simply because it fails to mandate mitigation.

H.R. 4915 would also fail to provide such incentives if §208 were deleted. Few people want to buy earthquake insurance in the first place. Should earthquake insurance

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*/ To some extent, the Subcommittees's questions are more relevant to the primary insurance programs under H.R. 4915 and H.R. 4480, but the interrelationship of mitigation, losses and costs apply as well to the excess reinsurance programs.

be required only if a community becomes eligible for the insurance program, and if eligibility is conditioned on the adoption by the community of hazard mitigation measures, those who do not want to be forced to buy the insurance would have an incentive to keep the community out of the program. These individuals will then join with others, such as developers, builders and realtors, in opposing mitigation action by the community.

Without the countervailing pressure of §208, which would deny benefits and loans if the community failed to adopt mitigation measures and qualify for the program, the insurance purchase requirements will, at best, be meaningless and, at worst, counterproductive to mitigation by communities.

With respect to incentives for mitigation by homeowners, even with §208, the insurance purchase requirement of any federal program will not achieve mitigation unless individual premium rates reflect the particular hazards of the property insured. This is no less true for earthquake insurance than for fire insurance.

Accordingly, H.R. 4915 requires that premiums for homeowners, as well as for insurers under the excess loss reinsurance program, reflect:

> "differences in risks due to exposure to degrees of earthquake hazard, including involvement of active faults, susceptibility to landslide, site amplification, and liquifaction, type of structure, the presence or absence of loss reduction measures, and the earthquake survivability of emergency services and lifelines" (§224 [see also §§225 and 244]).

The insurance purchase requirement of H.R. 4480, however, will not be an incentive for homeowners to adopt hazard mitigation measures because the proponents of the bill promise that premiums will be so low that hazard mitigation efforts by individual homeowners cannot be rewarded by additional premium reductions.

The Earthquake Project has admitted this publicly, acknowledging in one of its handouts that:

> "Given the relatively low premiums for earthquake insurance under our program (average of $50 even in the highest risk areas), most loss mitigation measures (especially retrofitting existing structures) may not prove very cost-effective." [parenthetical clauses in original]

QUESTION 2. How effectively would H.R. 4915 and H.R. 4480 act to reduce the federal liability for earthquake disaster assistance?

ANSWER. H.R. 4915 will effectively reduce this liability by assuring, through mandated mitigation, that future construction is more earthquake resistant, that loss reduction measures are implemented for existing construction, public structures, utilities and lifelines, and that premiums in both the primary and excess loss reinsurance programs reflect risk factors.

H.R. 4480 will actually increase federal liability for earthquake disaster assistance. The bill requires no mitigation and premiums will bear no relationship to the earthquake exposure of the risks insured in either the primary or reinsurance program.

H.R. 4480 creates no more than a liberalized disaster assistance program -- funded by homeowners in every state and by

taxpayer contributions to cover the deficits resulting from the heavily subsidized homeowners premiums promised under the bill.

H.R. 4480 may characterize its provisions as insurance, but they are insurance in name only.

In the name of insurance, H.R. 4480 will require the federal government to assume liability for risks that are either not insured today or are currently insured by private companies at multiples of what H.R. 4480 will permit the government to charge.

Accordingly, total federal payments for earthquake losses will be greater under H.R. 4480 than the current costs of both the insurance industry and federal disaster assistance combined.

Moreover, the failure of H.R. 4480 to mandate hazard mitigation will increase loss of life and destruction of property. Construction in disregard of earthquake hazards will be encouraged as long as the federal government will be there after the disaster with so-called "insurance" payments.

QUESTION 3 (a). In what ways do the mitigation provisions in each bill contribute to the goal of reducing the federal earthquake liability?

ANSWER. There are no mitigation provisions in H.R. 4480. The bill contains provisions for study of mitigation and potential recommendations, but it offers no realistic hope and certainly no assurance that mitigation will be implemented.

Unless federal assumption of insurer responsibilities is withheld until mitigation is implemented, the insurance corporation created by H.R. 4480 can study mitigation forever but mitigation will not occur.

Spokesmen for the Earthquake Project have been equivocally promising some form of mitigation since before the introduction of H.R. 4480, at least to those Members of Congress and their staffs, and to dissenting insurers, who have repeatedly pointed out the absurdity of asking Congress to commit 60 to 100 billion dollars or more for a program that primarily benefits the insurance industry.

But H.R. 4480 is still void of mitigation requirements and the Project is still lobbying against mitigation.

Given this track record, and particularly if the Earthquake Project is sincere in one of its primary announced reasons for refusing to include mitigation in its bill -- fear of developer, realtor and banking opposition -- the Project can hardly claim that it will effect mitigation later, after the legislation assuming insurance industry liability has been enacted and the Corporation created by H.R. 4480 is playing with taxpayer dollars.

In contrast, the mitigation provisions of §204 of H.R. 4915, when implemented through the incentives contained in §208, will assure that the nation's structures, utilities and lifelines will better withstand future earthquakes.

If H.R. 4915 is enacted, the amount of federal liability from both insurance and disaster assistance will be less than under H.R. 4480 or any other legislation that fails to mandate mitigation.

Nevertheless, even under H.R. 4915, and under any legislation mandating insurance purchase, where less than full actuarial rates are charged, more money will be paid out than is currently paid by both private insurance and federal disaster assistance. A greater number of properties will be insured than are today, existing structures generally will receive some subsidy, and insurance will compensate losses more completely than does disaster assistance.

But only under H.R. 4915 is it possible for the total federal costs ever to diminish as the mandated hazard mitigation measures make themselves felt.

QUESTION 3 (b). In what ways do these mitigation provisions contribute to the long-term viability of the insurance program itself?

ANSWER. Without mandated mitigation, the insurance program can never be viable.

With mitigation and the resultant increase in earthquake-resistant structures, the gap between premiums and losses will gradually narrow and the federal contribution will be reduced. Eventually, it is possible, though not likely, that the gap may be eliminated.

Without mitigation, however, the program will assume an ever increasing amount of liabilities without adequate premiums and with no hope of loss reduction. It is not insurance, but insurer welfare, for the federal government to assume insurers' liabilities, to be required to charge inadequate rates (far

below what insurers are currently charging), and to be prevented, by the absence of mitigation, from reducing its exposure to loss.

If private insurers thought that the concepts of H.R. 4480 were sound, they would not be in Washington asking the federal government to take the risk. If they thought that earthquake related coverages were profitable without mitigation, they would keep them for themselves.

Those insurers that support H.R. 4480 do a disservice not just to the nation, but to their industry as well. As someone who has been involved in insurance for more than 30 years, as a regulator and an attorney, I have been asked by incredulous observers to explain the Earthquake Project's stubborn refusal to endorse effective mitigation.

They ask if the Project's position does not confirm criticism of the insurance industry as greedy and indifferent to public needs. Although I do not believe it does, I can understand why the question is asked.

Of those insurers participating in the Earthquake Project, there are probably more who recognize the fatal flaws in H.R. 4480 than who endorse its failure to require mitigation. Unfortunately, few insurers have yet voiced their reservations publicly, out of a misguided concern for presenting a united industry position.

Perhaps well meaning, but narrowly focused technicians, having concentrated for years on a perceived need for federal backup of the industry's earthquake exposure, forgot that hazard mitigation has long been a hallmark in all lines of insurance,

as evidenced by historic and continuing loss reduction efforts in such fields as automobile, workers compensation and fire insurance.

If, on the other hand, exclusion of mandated mitigation was a policy decision, the Project's position is an unintelligent exercise in arrogance.

Nor can ego and inability to admit error be disregarded as a continuing obstacle to common sense. Once committed to a course of action that excluded mitigation, those identified with the Project's legislation have proven unable to respond to broad-based criticism -- even from those who would otherwise be supportive.

Whatever the reasons for the failings of H.R. 4480, it is time for the rest of the insurance industry -- those who recognize the need for mandated mitigation, but have not yet come forward -- to abandon their embarrassing identification with such self-serving legislation and to endorse H.R. 4915 and its corresponding legislation, H.R. 4462, */ which serve both the industry interest and that of the public.

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*/ H.R. 4462 is substantially similar to H.R. 4915, but is self-standing rather than an amendment to the Earthquake Hazards Reduction Act of 1977. The only substantive difference between H.R. 4915 and H.R. 4462 is that the former places the authority to establish the hazard mitigation criteria in the National Institute of Standards and Technology ("NIST") while the latter places it in the Federal Emergency Management Agency ("FEMA").

I am troubled by the designation by H.R. 4915 of NIST as the agency to promulgate mitigation criteria. I believe that FEMA is more appropriate for that function because: (1) the agency that administers the program also should have the final authority as to its criteria; and (2) although both FEMA and NIST are experienced with respect to building codes, only FEMA, through the National Flood Insurance Program, deals with land use as well as building codes, both of which will be required under either bill.

With mandated mitigation, there is justification for a federal primary earthquake insurance program, involving subsidies, but also reflecting degrees of risk.

With mandated mitigation under the primary program of H.R. 4915 extending to structures, utilities and lifelines that are not insured under the primary program, there is also justification for a risk based federal excess loss reinsurance program. */

Without mandated mitigation, these programs cannot be justified on either human or economic grounds and will be only a black hole for taxpayers's dollars.

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*/ Under the excess loss reinsurance program, the federal government will reinsure earthquake related losses on 15 lines of insurance written by private insurers. These include fire, commercial multiple peril, ocean marine, workers compensation, other liability, aircraft, glass, boiler and machinery and reinsurance. (§242 of H.R. 4915; §10(b)(1) of H.R. 4480)

Mr. BROWN. Thank you very much, Mr. Bernstein.

I have to pay some tribute to Mr. Bernstein's role in this legislation. I, of course, have been interested in this subject for the last 10 or 15 years, but it wasn't until recently that I became more concerned about the insurance aspects, and then seeking knowledgeable advice, many different channels pointed in the direction of Mr. Bernstein, and I have since recognized his long history of involvement in programs of this sort.

I didn't realize how generous and willing he was to volunteer his time until we've reached the stage of drafting this legislation, and he's been serving as a consultant on it.

Now, of course, it's obvious that Mr. Bernstein has very strong opinions. He's been soft-pedalling them this morning, but he's been most generous and helpful, and I want to pay tribute to him for doing that.

Mr. Boehlert, do you care to begin the questioning, or shall I proceed from the other end?

Mr. BOEHLERT. No, I would like, I've got a couple a questions here, Mr. Chairman.

At the outset, I'd like to apologize to our distinguished panel of witnesses and others that might come forward, but right now the House of Representatives is on trial on the floor, and we have a career at stake of one of our colleagues, and so I think most of our members feel it critically important that they be there.

I would also like to acknowledge the leadership of my colleague, Mr. Brown, in this matter. So often in the past it's been viewed as exclusively a California problem, and I am trying my level best under the leadership of Mr. Brown to convince my colleagues and the other States of the United States that this is a serious problem, and we are at risk all over, including my State of New York.

With that observation and apology—and I hope you gentlemen all understand—let me start with Mr. Nutter.

You have acknowledged privately that flood insurance programs have resulted in mitigation measures that wouldn't have occurred otherwise. Isn't that correct?

Mr. NUTTER. Absolutely.

Mr. BOEHLERT. Yes, but—

Mr. NUTTER. I couldn't deny it all Mr. Bernstein's characterization of a number of communities that have adopted measures.

Mr. BOEHLERT. Well, isn't this likely to be even more true in the case of earthquakes?

Mr. NUTTER. Well, I don't know. The difference and the nature of the risk of earthquakes and floods needs to be understood. Floods are going to occur in obvious places—rivers, creekbeds. They're generally very localized. It's clear the communities generally have frequent experience with floods or high water levels. The risk is known and observable.

Earthquakes aren't the same case. Clearly, in California, as the Chairman would know, the seismic activity as well as the monitoring, generally has helped identify, where the fault lines are, albeit even that is not a complete science or determination.

In many parts of this country, it is not clear; it is not as well known or understood, where the earthquake risk is greatest.

Mr. BOEHLERT. Well, isn't that an argument then for more mitigation rather than less?

Mr. NUTTER. Well, the question is what are you going to mitigate, and where are you going to mitigate it? Is Pittsburgh in an earthquake zone? Is Memphis in an earthquake zone? Yes. What's the degree of risk there?

I think the concern is, whether or not as Mr. Bernstein has suggested, shove mitigation down the throats of local and State officials, or whether you try to build a partnership with those local and State officials, as well as organizations, such as Mr. Manning is with, that developed codes, working with local officials to try and understand where they are at risk, as best as can be determined, and then develop appropriate codes and zoning requirements.

We do not—and I should make this clear, if it's not already clear—the Earthquake Project and the insurance industry do not oppose mitigation measures adopted by local communities or States with respect to zoning requirements or building codes, or other mitigation techniques.

The question is how best to achieve that.

Mr. BROWN. Give me some ideas of what you would propose for Governments to adopt mitigation.

Mr. NUTTER. Clearly, the Swift-Drier approach provides, what we think, are economic incentives. The premiums that are being charged for the insurance are reasonably low, and one could not easily make an argument that you can reduce the premium sufficient to encourage mitigation measures. However, the proposal clearly suggests that the deductible can be used very much as an economic incentive for mitigation measures.

As Congresswoman Pelosi testified this morning, the deductible is reasonably high in those areas where earthquake insurance is purchased. Thousands of dollars, in most cases. That should be a quite adequate economic incentive for people to take mitigation measures with existing structures.

And certainly, with respect to new structures, mitigation techniques that can be built into construction, are reasonably affordable.

I doubt that we would have any disagreement whatsoever of the standards that were set forth in Mr. Brown's bill for the concepts or principles that should be used in determining what would be appropriate. I suspect we would have very little disagreement, if any, with respect to the study that FEMA referenced earlier, that is close to be completed with regard to the kinds of mitigation techniques that ought to be adopted.

The only difference that we have had with this legislation is whether or not it ought to be, as Mr. Bernstein says, shoved down the throats of State and local officials, or whether it ought to be adopted in a partnership of local and State officials, the Federal Government and the private sector.

Mr. BROWN. I will yield, Mr. Chairman.

Mr. VALENTINE [RESUMING CHAIR]. Mr. Browder, do you have any questions?

Mr. BROWDER. I have no questions, Mr. Chairman. Thank you.

Mr. VALENTINE. Mr. Campbell?

Mr. CAMPBELL. Thank you, Mr. Chairman. I have two questions.

The first is directed towards a comment that Mr. Bernstein made that I didn't quite understand, so I'd like your explanation of it.

I believe you said that if we adopted the Swift-Dreier Bill, that would actually be less mitigation than under the status quo. I can understand less mitigation than under the Brown bill, but why less mitigation than under the status quo? That I didn't follow. Would you kindly elaborate?

Mr. BERNSTEIN. I mean, there is no mitigation under status quo, so I either didn't make myself clear or I was not understand. I probably didn't make myself clear.

I don't see more mitigation occurring under the industry bill of any significance than the status quo. I don't think they'll be less.

Mr. CAMPBELL. All right. I didn't understand you.

Mr. BERNSTEIN. But there will be less in one respect, though. There's one area that may be less, though. And that is, if you have the insurance purchase requirement in the industry bill, and there at least will not be an increase in mitigation, because if you have the earthquake purchase requirement in the bill, an earthquake insurance is only available if mitigation has been adopted in the community; then all those people who don't want to buy earthquake insurance will have an economic incentive to join the builders, developers, and realtors, who allegedly lobby against this, both by my standards and by the industry. We all agree they're the ones who lobby against this. Because those people will not want the insurance to be available in their community because, under the Swift-Dreier Bill, they'll be required to buy it, so you're building a constituency, to oppose insurance purchase—because of insurance purchase to oppose mitigation in that community.

Secondly, you'll also have an increase in losses.

One of the things we saw very clearly in the Flood Insurance Program was builders selling lots under water with the promise that Uncle Sam will build you out, he'll buy you out, with earthquake insurance after the flood. I mean, we saw that physically, both in the land sales program, which I administered at HUD, as well as in the insurance program.

Insurance will be used as a vehicle to increase the sale of property because Uncle Sam is out there, or some other policyholder in Nebraska to bail you out in Charleston, or in California, or some other place, with his two dollars—even though he may have no risk—which will build up, because then you'll get insurance, you'll get paid off if the loss occurs, and there's no economic incentive to mitigate the loss.

I'm interested in this discussion about—

Mr. CAMPBELL. Excuse me, I wish to pursue my first question.

I still don't believe you've proved your case, and it could be I'm not properly understanding. The moral hazard problem that you describe in the second category, that I understand. But that, to me, is not made any worse by the Swift-Dreier Bill.

The first argument is that in the event that people don't have any personal choice for earthquake insurance, so there's no personal desire for it at all, they will, in the presence of a Swift-Dreier regime, band together to prevent their local community from adopting a mitigation program, less they be obliged to buy an

earthquake insurance, assumedly at a premium that would then be lower than it would have been, but for this mitigation program.

Now if I have that right, it seems to me that you could be right, but you could also be wrong. There's nothing mathematical about your conclusion. There's something judgmental about your conclusion, and I respect your judgment; you know this field. But it's a choice between somebody who presently has no taste for insurance, deciding, "Well, I'll buy some now because it's cheaper," which would be the case if they had an earthquake hazard mitigation program, or, "I'll tell you what, I'll ban together to keep it from happening at all," and I'm not sure that they would jump to the conclusion that I'll ban together to keep it from happening at all, rather than ban together, and say, "Well, I didn't want it before, but if I participate in mitigation, I can make it cheaper." It seems to me either event could result.

Mr. BERNSTEIN. Well, I wish resolution could be more mathematical than it is, too, but my judgment, based on that very same experience in the Flood Insurance Program, where we saw individuals get up at local meetings that were voting on flood insurance legislation, or a local codes, and said, "We don't want to buy any flood insurance. We're paying zero now. We don't want to pay $50," but zero is better than 50.

Mr. CAMPBELL. Yes. Thank you.

Mr. BERNSTEIN. And they lobbied against it.

Mr. CAMPBELL. I think I understand your point now. I don't at all undercut your judgment. Again, I say I respect your judgment, but I did want to make clear that your prediction is not one that must follow from the structure of the bill, and I trust with that you agree.

Mr. BERNSTEIN. No, I don't agree. I don't agree, because—

Mr. CAMPBELL. Well, in that case, we're going to take more time here, and I didn't wish to, and we probably have to go for a vote.

I would ask you this. If you could make it clearer to us in the form of a letter, I'd be very pleased to, whereby the Swift- Dreier Bill leads to this conclusion of a necessity.

Mr. BERNSTEIN. Okay.

Mr. CAMPBELL. And I thank the Chairman.

Mr. BROWN. Thank you, Mr. Campbell.

[The Letter from Mr. Berstein follows:]

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August 3, 1990

Honorable Tom J. Campbell
U. S. House of Representatives
Washington, D. C. 20515-0512

Dear Congressman Campbell:

Re: H.R. 4915, H.R. 4480

At the Subcommittee hearing on July 26, 1990, you asked me to explain my concerns that if §208 were deleted from H.R. 4915 there would be less mitigation than under the status-quo. You agreed with my concern about the moral hazard inherent in H.R. 4480 -- the tendency of insurance availability to undermine the incentive to mitigate, particularly if premiums are not risk based. However, you questioned my concern about the negative effect on mitigation of people's resistance to buying insurance.

Pursuant to your request that I address your question in writing, I will restate my position as contained in my written testimony.

> "Few people want to buy earthquake insurance in the first place. Should earthquake insurance be required only if a community becomes eligible for the insurance program, and if eligibility is conditioned on the adoption by the community of hazard mitigation measures, those who do not want to be forced to buy the insurance would have an incentive to keep the community out of the program. These individuals will then join with others, such as developers, builders and realtors, in opposing mitigation action by the community.
>
> "Without the countervailing pressure of §208 [of H.R. 4915], which would deny benefits and loans if the community failed to adopt mitigation measures and qualify for the program, the insurance purchase requirements will, at best, be meaningless and, at worst, counterproductive to mitigation by communities."

If you would like me to meet with you to discuss the issue further, I will make myself available.

Sincerely,

George K. Bernstein

cc: Carrye Brown
Subcommittee on Science,
Research & Technology
(for submission for the
hearing record)

Mr. BROWN. Gentlemen, I'm going to take a few minutes for questioning, but when I get through, I think we'll discharge this panel in the light of the time that we've taken already, so that we can proceed with the third panel right after this roll call.

Let me ask both of you—Mr. Nutter and Mr. Bernstein—I recall that Mr. Reilly made a rather telling statement, at least it struck me, that one of the mistakes in the Flood Insurance Program was the failure to vigorously embark upon a process of getting the cooperations of the States and local Government prior to the development of the Federal Program, if I recall his statement correctly. This bears on the importance of developing a cooperative approach to this. Would either of you, or both of you, comment on whether this statement of Mr. Reilly's was, in fact, a defect in the way we went about enacting the Flood Insurance Program?

And if we proceed in a more—in a different way on earthquake; that is, a vigorous program to secure the cooperation of State and local Government—would this enhance the success of the program?

Mr. NUTTER. If I might go first with a brief comment, and then I would ask Mr. Manning, if you would permit, Mr. Chairman, to comment, since he's involved in the Flood Insurance Program as well, from a code and enforcement point of view.

It seems to me that both Mr. Bernstein and I would agree that local cooperation, even if it's a mandatory program, or a partnership program, is going to enhance the effectiveness of the program. You can mandate certain minimum standards, but if you do not get the cooperation for enforcement, you really have not achieved what you want.

With that, if you don't mind, Mr. Chairman, Mr. Manning will make a comment.

Mr. BROWN. No, I'd like to hear from Mr. Manning.

Mr. MANNING. Mr. Chairman, I think mitigation is comprised of really two elements—two major elements. One is the adoption. And I think, from all records that FEMA has published, I think, in terms of local Government adoption of the Flood Insurance Program has been excellent.

The second step is compliance. And I question that. And I question the compliance as a result of being on two disaster evaluation teams for the National Science Foundation, for Hurricane Alicia and Hugo. I found in those areas, that I evaluated the damage after the hurricanes, compliance was very poor. Very poor.

The only way that you will get compliance is letting local and State Governments buy into any Federal legislature. And I think this is a very key element to either of the bills, and I think that if you do not look at local and State Governments, I think you are going to have problems with enforcement of any mitigation. I think it's also interesting to note that in the South, the Southern part of the United States, very few States actually enforce statewide building codes. That authority is delegated to local Governments, and so I think in those States, it's very essential that you work with local Governments, or one or three of the model code organizations.

Thank you.

Mr. BROWN. Thank you, Mr. Manning.

Mr. Bernstein.

Mr. BERNSTEIN. Well, let me answer that by way of Mr. Manning. Let's talk to enforcement. I don't know how much more involvement you can have by local Government than having had them adopt the code. If they don't choose to enforce it, that's not a defect in the program, that's a defect in their will, their courage, and even their honesty. I found that most of the code officials in this country are absolutely dedicated. Most of them would welcome the assistance of having a Federal mandate that would let them push through the codes that they know should be pushed through in their local communities, and they'd been unable to get through because of developer opposition. That's the experience I have with the earthquake area, based on my experience in the last 20 years, particularly since I headed up the Expert Review Committee of the Hazard Reduction Program.

But the fact that enforcement is not as good as it is, should not make us lose sight of the fact that there be no enforcement, if you did not have the mandate in the first place. We've heard about various areas that are building back after Hugo, right where they built before, in clear violation of the codes and the statute. That should be enforced. That should be enforced by the local Governments, and, if it isn't, the Federal Program has the whip.

The Federal Program can revoke availability of insurance, and thereby the availability of the mortgage money. That's a matter of enforcement. It's not a matter of local communities not knowing enough or not being drawn into the program. As to the State level, same thing; you need the States. When the flood program began, you had two States—Minnesota and Wisconsin— that had any substantial statewide water resource expertise. Today you have over 40. That's a heck of a lot of progress.

But the point is, even with that progress, even with that knowledge, without the mandate of the '73 Act, the communities would not have come in, and when we hear that there is a difference between flood and earthquake—I am obviously very old, because I remember 1968, when the insurance industry came down to Washington, begging for a Federal Flood Insurance Program, because they were afraid that local States would force them to write insurance that they deemed unenforceable, uninsurable for the very reasons that they now attribute to earthquake insurance, which they've been writing forever.

So I take with a certain grain of salt all these fine distinctions between earthquake and flood. Of course there are differences. There are structural differences, there are locational differences, but the principles of the Brown Bill can apply very well to—and reflect those differences. And for anyone to say that the Federal Government has no business requiring mitigation because of these differences, but the Federal Government has every obligation to force policyholders throughout the United States to cross-subsidize this program and to force taxpayers to bail it out when the losses come, that, to me, is undecipherable in terms of any intelligent approach to mitigation or even insurance.

Mr. BROWN. Well, I, of course, am strongly committed to the mitigation principles embodied in the legislation, but, if I may say so, Mr. Bernstein, I think maybe you failed to properly evaluate the political influence of the financial and development community

when it comes to getting action at either the local or the Federal level. And I would suspect, on the other hand, that Mr. Nutter and the insurance industry may overestimate the influence of it. Somewhere in between there's a realistic evaluation of the political problems involved here, and I want to solve those problems, and it's going to have to start with an effort to get these industries—the financial, and the development, and construction industries—to understand exactly what's involved here, and how the long-term public interest may require them to change some of their attitudes, and that's what I'm trying to build up to, very honestly.

Mr. BERNSTEIN. Congressman Brown, may I just address that for a moment?

I don't underestimate the opposition—

Mr. BROWN. Make it a short moment, or I'm going to miss this very—

Mr. BERNSTEIN.—We had that opposition in 1973, and Congress overcame that when we told the truth about what the costs were on either side. I think if that truth be known today, you would overcome that opposition again, and that's the issue. You have to make that hard choice, but it's doable. It was done before, it can be done again.

Mr. BROWN. Gentlemen, I'm very, very appreciative of your statements and your contributions. We will continue to call on your for additional amplification on these matters. But, at this point, I'm going to excuse you, and alert the last panel that they will be called immediately after the vote.

[Recess.]

Mr. VALENTINE. I'm surprised Mr. Brown and I crossed paths, but we need to get started, if we can. And I don't want to take advantage of anybody. There's been some suggestion that the leadership would prefer that we suspend committee business pending the Ethics discussion on the floor of the House. We're attempting to find out whether or not that's just a rumor. In the meantime, we will proceed. We realize if we stop this, it will inconvenience a number of people. We don't want to do that, however, we want to find out what the Speaker's wishes are with respect to do that, so while we're attempting to clarify that, we will proceed.

It being quite an unusual situation, of course, because that next order of business will be the report of the Ethics Committee, having to do with how a sitting Member of Congress will be dealt with by way of punishment.

Mr. VALENTINE. We are at our third panel. Mr. Arnold, Mr. Beavers, and Mr. Jones, and Mr. Ross. Your presentations will appear in the record as presented to the committee, and we ask you to summarize or otherwise proceed as you deem appropriate.

Mr. Arnold?

STATEMENT OF CHRISTOPHER ARNOLD, FAIA, REPRESENTING THE AMERICAN INSTITUTE OF ARCHITECTS, AND PRESIDENT, BSD BUILDING SYSTEMS DEVELOPMENT, INC., SAN MATEO, CALIFORNIA

Mr. ARNOLD. Mr. Chairman, I am a Fellow of the American Institute of Architects, and I am here to represent the American Insti-

tute of Architects today. I am an architect in private practice. I have studied, researched the earthquake problem for some 15 years, and, most recently, I was a member of the Board of Inquiry for the State of California, of the Loma Prieta earthquake.

It's a measure of the importance of the subject that we have two carefully conceived bills to consider here today. I would like to make five points that are dealt with in more detail in my written testimony, which I present for the record.

The first is that we believe that the ultimate objective of the earthquake program, is to try and arrive at an earthquake- resistant environment in the long-term situation. We are not simply looking at the limited objective of an insurance scheme. Therefore, the tie to mitigation goes well beyond the immediate needs of an insurance scheme. If there is no direct tie to mitigation, insurance is a disincentive to mitigation, and therefore it is against the ultimate objective of trying to arrive at a resistant environment for future generations.

Now the second point is mitigation works. We've heard testimony to that effect. I'm from California. We have enough experience to know that mitigation is effective, whether it deals with new buildings, whether it deals with existing buildings. If it's so good, why is it not implemented in other areas? I think there are three basic reasons for this, which are familiar enough.

The first is that there is a lower perception of risk in other risky areas, and, in fact, there is a lower risk, so the public is not altogether unwise in that.

The second is that our society has a fundamental problem in implementing long-term measures. We tend to be a society that looks to short-term needs and short-term responses. A business environment tends to look at a one-year payback; a political environment tends to look at a four-year payback; nature has no such restraints. So our mechanisms are really not very effective in dealing with long-term situations in terms of the protection of future generations, and in terms of a risk, which is difficult to assess purely as a short-term problem.

And, thirdly and related to that, we tend to have a bottom line mentality, and this particularly applies, I think to the building industry, which is highly competitive. We tend to look for solutions which are quick and which are inexpensive, and this goes against the trend of improvement of our building stock against future risks, whether they be earthquakes, floods, or the normal deterioration that our buildings undergo through the normal forces of nature.

The third point, then, is that, if mitigation is necessary and it is not being implemented to the extent that we would like in other areas than California, mitigation needs help, and an insurance scheme, as has been discussed, can offer that help, and that Federal action, we believe, is necessary to assist that.

Now the Swift Bill, whatever has been said in terms of the enthusiasm of the insurance industry for mitigation, the Swift Bill, in fact, uses the term "study and encouragement", and I would suggest to you, A, that that is not enough; and, B, that is exactly what FEMA, in its, I think, well-conceived mitigation programs, has

been doing for many years, and some of us, some of us on the technical side, have been assisted in doing that.

And I was pleased to hear Mr. Nutter's account of the education proposals of the industry. They were excellent, and they were particularly excellent because they had a very familiar ring. In fact, they, almost word for word, met what the FEMA Mitigation Program has been doing for the last few years, and which I and others have been involved in. We have held seminars, we have written brochures, we have written yellow books. It's all good, but it isn't enough.

The Brown-Boehlert Bill, again, has been discussed, had direct ties to mitigation, and there are some technical issues. It's an ambitious bill. There are some technical issues that need to be worked out, and that can be worked out, but it establishes a fundamental principle that is very, very important in terms of this ultimate objective that we have.

The fourth point is one that I don't think has really been mentioned, and that is the precedence for this sort of thing, in terms of linking building practices to safety and insurance. And the major precedent is fire insurance. And the way in which that was linked to building practices, occurred so long ago that we've forgotten about it. It occurred about two generations ago, when fire in buildings was a significant threat. But as a designer, my design work is conditioned, very largely, by code requirements that relate to fire, that relate to the use of certain materials, and that relate to the use of certain designs in terms of exiting the design of stairways, and so on. Those, in turn, relate to mandatory requirements required for insurance purposes.

They also follow a very logical course, in which the strategy for fire insurance is based on improvements in the building to make it more fireproof, and, in a sense, education of human behavior to make them more self-protective.

We also have incentives in the design against fire. If I design a building with sprinklers, which is a positive fire suppression system, I can then design a larger building for a given kind of construction, which is beneficial to my client and myself.

In addition, out of fire insurance and fire resistent design, has come a lot of research into fire resistant assemblies, and it has also created a market of private industry to develop new, better, lower-cost ways of solving the fire problem, so the development, for example, of gypsum board wall materials as a fire resistant measure, is really the direct result of that. A generation ago, we encased steel buildings in concrete to provide fire resistance. Now we use low cost gypsum assemblies to do the same thing, so there are automatic marketing and research benefits there.

Finally, in a slightly didactic mode, I'd like to say that all of these things we're talking about—mitigation and the nature of an insurance scheme—I think come under a conceptual framework which has six variables.

The first is the distinction between California, and other seismically-risky States. There's no suggestion that the mitigation requirements in California would be the same in other States. There would be significant difference, what might be a perfectly reason-

ably mitigation measure in Missouri, would be quite out of line in California and vice versa.

The second is a technical and social and economic one. And that is the distinction between the wood frame house and other building types. The wood frame house is very different in terms of its earthquake performance. It is also very different socially in terms of ownership, and, economically, in terms of effects on the family.

Just parenthetically, mitigation of the wood frame house, I would say, is the one really clear cut case where we know the benefits. We know the benefits of building foundations and bracing cripple walls. We know that if you do those things, you almost guarantee survival; if you don't do those things, you have catastrophic loss to families that cannot afford it.

The cost—and this comes from recent studies in Loma Prieta—the cost in benefits, costs approximately one percent of the cost of the house to brace the cripple walls and foundation, if you have a contractor to do it. If, like myself, you do it yourself—there are some architects who can use a hammer and nail—it costs about .1 percent. Out of that, you save 10 to 15 percent damages. So if you have a $100,000 house, you get a contractor to help you, it may cost you $1,000 to fix it up; you do it yourself, you can do it for about $150. You will save $10,000 to $15,000 worth of damage, and your family being homeless for months.

The fourth and fifth variables are new buildings versus existing buildings. They're a very different proposition. All I'm suggesting is that when one goes into the technical issues and setting technical criteria, these six variables must be remembered. California versus the other States, the wood frame house—which is really the immediately benefits of both these insurance schemes are directed—with the wood frame house versus other buildings, and the new building problem, versus the existing building problem.

Thank you very much.

[The prepared statement of Mr. Arnold follows:]

THE AMERICAN INSTITUTE OF ARCHITECTS

STATEMENT OF CHRISTOPHER ARNOLD, FAIA

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES SUBCOMMITTEE ON SCIENCE,
RESEARCH AND TECHNOLOGY

OF THE

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE,
SPACE AND TECHNOLOGY

JULY 26, 1990

• WASHINGTON, D.C. 20006 • (202) 626-7300 • FACSIMILE (202) 783-824

1. Introduction:

Mr. Chairman, and members of the Subcommittee, my name is Christopher Arnold, a Fellow of the American Institute of Architects, whose views I represent today. I am also a practicing architect in the firm of Building Systems Development Inc., of San Mateo, California.

The AIA, with 54,000 members, this year celebrates its 133rd anniversary. We appreciate this opportunity to appear before you to offer our views on legislation designed to establish a national earthquake insurance program.

The AIA has a commitment to earthquake disaster mitigation, both by working to improve the standards of design and construction in earthquake prone areas, and by providing assistance to communities that have suffered damaging earthquakes. The Institute has a large Building Performance and Regulation committee that focuses on improvement in the content and application of building codes and regulations.

The AIA has sponsored nationwide workshops for architects on seismic design and, following the Imperial Valley, Coalinga, Mexico City, and Whittier Narrows earthquakes, AIA teams have provided planning assistance to aid U.S. and foreign governments in the recovery process. In 1989, following the disastrous earthquake in Soviet Armenia, an AIA planning team, of which I was a member, worked with Soviet and Armenian planners on the redesign of Spitak, a small town destroyed by the earthquake. This year, AIA planning assistance teams have worked in the cities of Santa Cruz and Watsonville, California, which were hard hit by the Loma Prieta earthquake of October, 1989.

For the last twelve years, I have been heavily involved in research on architectural aspects of the seismic problem, and I have spent much time, both as a consultant and in public service, on issues of earthquake policy concerned with seismic building codes and the reduction of risks to existing buildings. Most recently, I was appointed to Governor Deukmejian's Commission of Inquiry on the Loma Prieta Earthquake. I am not an expert on insurance, but I have a general understanding of some of the problems that relate to insurance against earthquake damage.

Earthquakes are one of nature's most fearsome forces. Their threat to life and property bears direct correlation to how well the structures that man builds can withstand those forces. The legislation under consideration today is intended to reduce the losses to people, communities and the federal government following the shattering experience of an earthquake by establishing a federal earthquake insurance program.

One of the bills, H.R. 4915, the "Earthquake Hazards Reduction Act of 1990," ties the availability of federal assistance and the insurance itself directly to the application of loss reduction measures such as state and local enactment of seismic building codes and land use management tools that result in these measures.

The other bill, H.R. 4480, the "Federal Earthquake Insurance and Reinsurance Act," would make insurance available for residential properties, but is more concerned with ensuring the continued viability of the insurance industry in the face of the claims that might arise as a result of a catastrophic earthquake. Loss reduction measures are encouraged but are not, initially, made mandatory.

In principle, the AIA believes strongly that federal earthquake insurance should be conditioned upon loss reduction activities, with precaution taken to ensure that undue economic burdens do not fall on those unable to sustain them. My testimony today will explore that principle and its implementation through proposed legislation.

2. Earthquake and Buildings:

The effects of earthquakes on buildings have been much studied and are well understood. Methods of providing seismic resistance to new buildings are highly developed and seismic building codes are effectively used in highly seismic regions such as California to ensure at least a minimum degree of safety to building occupants.

Regulation by seismic code is the beginning of a damage reduction strategy rather than the end. The main purpose of all seismic codes is to establish uniform force levels as a basis for design, and to provide some mandatory design requirements that experience has shown to be necessary. The choice of building forms, materials, and structural systems is still left to the building designer, and most experienced seismic engineers agree that these decisions have more effect on the building's performance and safety than the force levels to which it is designed.

Introduction of a seismic code in a region where it was previously not required, however, is the first step in ensuring a rational design against the destructive lateral forces of earthquakes. Without this, even a building that is perfectly safe against normal vertical forces will be vulnerable to earthquakes. The consequences of little or no attention paid to lateral force design have recently been shown in the tremendous casualties occurring in Soviet Armenia, Iran, and most recently in the Philippines.

In the United States there is a major distinction between California, with a good seismic code and generally good design and construction practices against earthquakes, and other locations in the country with a less active but nonetheless potentially

catastrophic earthquake situation. Because the earthquake threat is not in the community collective memory, these areas have not mandated seismically resistant design, and such activity is a low priority concern against more pressing social, economic, and political issues.

And yet, if disaster should strike, the human and economic costs could be tremendous, and the recriminations widespread and searing. These insurance schemes under consideration offer both some degree of economic peace of mind to homeowners and renters and, if loss reduction measures are required, an incentive for individuals and communities to begin the long-term protection of their property against the earthquake threat.

3. The Fire Insurance Model:

The main problems in developing a seismic design strategy are to persuade people on a scientific rather than experiential basis that there is a serious danger, and to enable the economic costs of the strategy to be affordable and reasonable in relation to the need for protection.

In looking at these problems, I believe there are some instructive lessons to be learned from the history and philosophy of fire protection and fire insurance as it applies to buildings. Fire insurance is so familiar that we take many aspects of it for granted, but the requirements of insurance companies have great influence on how we design, construct, and operate buildings, and how, as occupants, we behave in them.

In the design of buildings, the influence of fire insurance needs is pervasive. Many of its requirements are embodied in building codes, that mandate certain kinds of material and assembly performance, for example. Thus, when I design a public corridor that serves 10 or more people, its walls must be of "one hour" construction, and doors that open on to it must have a fire-protection rating of not less than 20 minutes: that is, they must be certified by a reputable testing laboratory that they will withstand a specified heat for the stated time without failing.

Behind these criteria stand a whole history of industry development to devise materials that will perform satisfactorily, the development of appropriate tests, and the rise of the laboratories that are qualified to perform these tests. Furthermore, much of this activity is market driven, because a greater share of the market for these components will accrue to the manufacturer who can meet the test requirements for the least cost.

The insurance relationship enters because meeting the battery of code standards that relate to fire safety is a prerequisite to obtaining fire insurance. In the origin of these requirements, the insurance companies were active in researching and setting

standards that would enable them to offer fire insurance for reasonable premiums--one of the measures of an effective earthquake insurance scheme.

Through this historical process, a number of benefits resulted such as improved safety, peace of mind for owners and occupants, and a viable insurance industry. Less familiar is the fact that many elements of the building industry were given an incentive to develop lower cost materials, components, and structural systems that would reduce the probability of catastrophic fires.

The significance of this model in relationship to the earthquake problem should become obvious. An effective earthquake insurance scheme can act as a spur to research and development in the techniques of earthquake hazard mitigation. This would reduce the cost and improve safety. In addition, it could relieve the insurance industry of some of the uncertainties associated with earthquake losses, and make some form of national insurance scheme more feasible.

4. Lessons of the Loma Prieta Earthquake:

Current seismic building codes focus on preventing building collapse, because experience has shown that this is the cause of almost all deaths and serious injuries. The standards are intended to represent the threshold of what is acceptable: to protect the public from the designer or builder who is incompetent, dishonest, or both.

One of the significant aspects of the Loma Prieta earthquake is to show the effects of this philosophy. The number of deaths, while recognizing the real tragedy of those that occurred, was very small. In comparison with the tens of thousands of deaths in Mexico City, the 25,000 official deaths in Armenia, and the quarter of a million official deaths in Tangshan, China, in 1976, we have done well. Our strategy appears to work.

Yet, the property losses due to building damage are grossly estimated, at the time of writing, to be $5.6 billion. Moreover, this figure does not measure those made homeless, and those who have lost businesses or jobs. You can drive around Stanford University and see no spectacular damage: no one was killed or injured, yet damage is estimated at $160 million and at this time one-half million square feet of academic and living space is still unusable.

Over 1000 homes were destroyed, and 23000 damaged, mostly in Santa Cruz county. Of these, almost all serious damage was caused by inadequate attachment of the house to its foundation and by unbraced cripple walls. Cripple walls are the short walls that run from foundations to the first floor (generally from two to three feet in height) in houses that have a crawl space or basement.

(Most modern homes are built on a concrete first floor slab in which the cripple wall does not exist). In many older homes, the cripple wall is not braced and consequently very weak. Under earthquake forces it collapses sideways, the floor drops, and the main portion of the house becomes distorted and unusable. The house can often be repaired but this is very expensive.

These foundation conditions can easily be corrected, before the earthquake, by any handy owner in a few hours work with bolts, nails and plywood. The cost will be in the low hundreds of dollars which will save damage in the tens of thousands. A handyman contractor, properly supervised, can do the work at very low cost. If such work were made a mandatory part of an insurance program, a market would be developed that could result in competitive methods and devices that could further reduce the costs. For those marginal owners for whom even a few hundred dollars would prove a hardship, tax incentives or outright grants could be made available; many precedents exist in the energy conservation programs of a decade or so ago.

For our larger buildings our present seismic strategies appear to save lives but at the cost of considerable property damage. This is a simplification but it has some truth. Thus a strategy which makes sense in terms of pure engineering economy may look less attractive when the whole building is considered. While the focus on life safety makes sense, the owner must understand that his building may satisfy the intents of the building code and yet suffer severe damage that may take months and millions of dollars to repair, or may even require demolition. This aspect of design to the bare letter of the code is seldom emphasized to their clients by architects and engineers, and few clients are sophisticated enough to question the design professionals closely on the expected performance of the building.

Another example is that our present seismic codes encourage the design of flexible structures. In pure engineering terms, these encounter less force than a more rigid building under the same ground motion. Because they can be designed for less force, their structures are less expensive. But the flexibility causes much more nonstructural damage to partitions, ceilings and light fixtures, exterior cladding, rooftop mounted airconditioning equipment, and the like.

It is also true that much of the costly damage caused by the Loma Prieta earthquake occurred in older buildings, constructed before seismic codes existed, or were inadequate. Nevertheless, the aggregate of costly damage, much of it nonstructural, to new buildings in this earthquake was considerable.

For example, millions of dollars worth of damage was done, for example, to the United Airlines terminal at San Francisco Airport.

This was primarily a combination of damage to suspended ceilings, and to sprinkler systems. At this time we do not know whether these systems were incorrectly installed, or whether our standard methods of installation are inadequate.

But any strategies for the mitigation of building damage, and hence making effective insurance approaches more viable, must recognize that the new building and the varieties of existing buildings represent different, though related problems.

5. Mitigation Methods for New Buildings:

For new buildings, careful design to current building codes appears to assure a reasonable standard of life safety. While the codes address the issues of nonstructural damage, these provisions do not go very far, and often, even in California, are not carefully enforced.

Items that need attention, and that insurance requirements should focus on, include:

- Careful bracing of suspended ceilings.
- Bracing of light fixtures, and safety wires attached to the structure for ceiling supported fixtures.
- Attachment of important partitions to the structure by methods that permit movement of the partition without damage.
- Careful positive attachment of cladding and glazing elements to allow for independent structural movement without breakage.
- Careful attachment of appendages and heavy ornamental features.
- Bracing of heavy bookshelves and storage racks.
- Bracing of plumbing, air-conditioning, and electrical elements (pipes, ducts, and conduit).
- Anchoring of heavy items of mechanical equipment, with particular attention to those that require vibration isolation.
- Particular attention should be paid to sprinkler systems, because their failure may cause costly damage (even without fire threat).
- Particular attention should be paid to seismic detailing for elevators, because of their importance immediately after the earthquake.

All the above items can be dealt with in new buildings for a small expenditure, and provide considerable savings in earthquake damage.

6. Federal Legislation is warranted:

H.R. 4915 sets up an arranged marriage between the availability of federal earthquake insurance and loss reduction measures to be taken by the property owner who is to receive the insurance. The assumption underlying the bill is that the two will not get together effectively without such an arrangement, which works like this: the federal government establishes an earthquake insurance program that involves private insurers, and also guarantees them against catastrophic losses in the event of a major earthquake. The insurance may cover only those properties that follow local and state laws regulating the location and construction of buildings in earthquake prone areas. To direct the states and localities in such areas to develop laws for land use management, zoning, and building codes for seismic safety, the legislation would withhold federal assistance for any applicable state or locality that fails to enact and enforce these laws. It would also withhold this assistance from properties in earthquake prone areas that fail to follow these laws.

The AIA believes that the availability of federal earthquake insurance as a matter of public policy is insupportable without some form of loss reduction measures required for the insured properties. Moreover, based on experience to date, it appears that unless these measures can be attained through state and local actions establishing earthquake-responsive land use planning and zoning and hazard mitigation standards, very few people will participate in the insurance program. And there is little incentive now for states and localities in most earthquake prone areas to take these actions.

Why would this be so? It is because most people do not believe that a catastrophe will happen to them. It's human nature. Even in California, where the probability of earthquakes is accepted, fewer than 10 percent of the public has earthquake insurance. For someone living in Missouri or South Carolina, the idea that the earth will shake and that their home or business will collapse is just not a realistic threat. They certainly feel no urgency about the matter, and many state and local governments don't either.

Yet we know that since 1700, 3500 earthquakes have been recorded east of the Mississippi River, and America's largest earthquakes, in 1811-12, took place in the Missouri/Tennessee area along the line of what is known as the New Madrid Fault. Closer to our time, in 1886, Charleston, South Carolina, suffered an earthquake that damaged every building in town, killed 60 to 100 people, and sent tremors as far away as Boston and Cuba. Frightened residents of Milwaukee and Chicago ran into the streets, and those sitting in the galleries of the Opera House in Terra Haute, Indiana, panicked.

A damaging earthquake occurs in the eastern United States on the average, every 25 years. Earthquake hazard mitigation is not a problem for technology. We have a good idea of what works, and a number of relatively simple measures can have dramatic effect in saving lives and dollars. Mitigation is more a problem of perception and implementation.

There is, therefore, much new construction in areas of the country known to be subject to seismic risk, that is either inadequately regulated or not regulated at all. This applies to fundamental structural mitigation measures, as well as nonstructural. To ignore requirements for seismic design is to store up the possibility of future disaster, and recrimination after the event will not restore lives or economic health. The increased costs of construction to a good seismic code are a small percentage of construction cost.

An effective insurance scheme, if mandatory in seismic areas, would force the application of good seismic design. If the owner could show that he is adopting both structural and nonstructural design and construction beyond the code minimum, then his premiums should be reduced. In this way, an incentive for the development and application of mitigation beyond the minimum would be provided. The fire codes currently have analogous incentives by permitting larger building areas for certain building types that sprinklered.

7. Mitigation Measures for Existing Hazardous Buildings:

The problem of existing hazardous buildings is more difficult to deal with. Mitigation measures focus predominantly on strengthening the building structure and materials to bring them up to an acceptable standard, even if less than that required for new buildings.

The main problem is that mitigation measures tend to be much more expensive (than the provision of seismic design for new buildings) and at the same time most hazardous existing buildings command lower rents and often have a marginal economic base. Closure of such buildings while strengthening measures are installed imposes a further hardship on owners and occupants. On the other hand, these buildings represent the high-risk situation, and we can identify with some degree of certainty which buildings are dangerous.

Even at this, however, many owners, particularly in the lower-risk seismic zones prefer to take the risks rather than incur the immediate economic losses of strengthening. The two most important proven steps that a homeowner could take to reduce earthquake damage--the foundation measures discussed above--are so cost beneficial that in many cases the owner really has no option.

Imposition of mandatory strengthening requirements for larger buildings that are economically marginal, such as much low-cost housing and single room occupancy hotels, may result in building demolition: the seismic risk disappears but the use of the building is lost. In the lower seismic risk zones natural attrition of such buildings may, with luck, take care of the problem before the earthquake comes. The degree of gamble and the economic realities of pre-earthquake strengthening must be related to the level of risk.

In some cases, some incentives may be possible in the form of tax relief, low interest loans, or outright grants, contingent on improving building safety. Again, an insurance scheme can help, by encouraging mitigation, and spreading the burden of costs over a wider base.

8. H.R. 4915

It is clear to the AIA that H.R. 4915's interest in fostering earthquake-sensitive design in new buildings is well-placed and reasonably achievable. With existing buildings, we believe that the expectation of mitigation is more difficult to realize. For them, the legislation should separately address buildings undergoing alteration and existing buildings that are not. We believe that it is reasonable to require loss reduction measures in renovation projects, as long as the cost of mitigation is not disproportionate to the cost of the underlying renovation. This provision would prevent discouragement of renovation. For existing properties not undergoing alteration, unless financial incentives were made available to their owners, it is unlikely that the opportunity for insurance alone will motivate people to take steps to strengthen their properties. In the alternative, however, a local or state requirement that existing properties incorporate loss reduction improvements upon sale or disposition would not be unreasonable.

In determining which properties should be regulated by laws and ordinances that promote loss reduction measures, it is important to make distinctions among areas according to the level of risk. The federal government has the ability to make these distinctions in a finer grain than simply the difference between an area that is earthquake prone and one that is not. The level of requirements for community participation in the insurance program and for individual businesses and homeowners should be tailored to their community's degree of risk.

The legislation would have the Director of FEMA identify earthquake-prone areas and communities (Section 201), and would have the criteria for loss reduction measures (Section 204) require jurisdictions to "refine identification of earthquake-prone areas by the Director" and "identify, and refine any identification by the Director, of any active fault, landslide, site

amplification, and liquefaction zones." The legislation should provide better linkage between Section 201 and 204, with respect to identification of earthquake prone areas, requiring the Director to establish a hierarchy of areas according to risk, setting forth mitigation criteria in Section 204 according to this hierarchy, and giving communities flexibility to meet earthquake mitigation goals within the framework of that criteria. The legislation, in Section 3, also needs a better definition of earthquake-prone areas. All the above items can be easily dealt with by minor rewriting and in initial studies.

If the premise that earthquake prone states and localities are reluctant voluntarily to adopt seismic codes and land use changes to mitigate earthquake damage is accurate, and I believe it is, then the means of encouragement is important. The legislation would require state and local actions aimed at loss reductions, as a condition of receiving various forms of federal assistance, including grants and mortgage insurance. While general standards would apply, within the framework of those standards states and localities are free to adopt whatever building codes and mitigation requirements they wish. On one hand, it would appear that the threatened loss of virtually all forms of federal assistance may be considered too stringent. On the other hand, no loss would occur at all if a state or community adopted and enforced appropriate codes and requirements to reduce earthquake losses. The trick is to find the appropriate amount of leverage, and it seems to me that total loss of federal assistance is excessive. An alternative may be to engraft onto certain programs, say, Community Development Block Grants or Rural Development grants, the necessary requirements for earthquake-sensitive codes and land use management and planning, as a condition of receiving such assistance.

While a community's loss of certain federal assistance may provide an appropriate inducement to its adoption of seismic codes and land use ordinances, it is also appropriate to withhold certain forms of federal assistance from individual properties that fail to comply with such local or state mitigation laws. H.R. 4915 provides for this sanction in addition to the denial of earthquake insurance.

In Section 203, the legislation would establish a 15-person committee to advise the FEMA Director in the preparation of regulations implementing the mitigation effort. It would be composed of 15 persons, representing various government and private entities. Since much of the mitigation provisions involve alterations of existing buildings as well as new construction, it would make good sense to include architects in the list of professionals specifically identified for appointment to the committee. Unless one designation is dropped, this would add a person to the committee.

The effective dates by which certain actions must occur appear to create a situation in which the actions needed may take place

before the issuance of regulations and guidelines implementing the act. For example, under Section 208, communities must participate in the insurance program, by approving seismic codes and land use planning provisions sensitive to earthquakes, within 18 months of the date that the FEMA Director identifies an area as earthquake-prone, yet there is no effective date in Section 204 by which the criteria for these codes and standards must be developed. Effective dates should not predate the issuance of final regulations, unless sufficient transition rules are adopted to give states and localities guidance about compliance with the requirements of the act during the interim period.

9. H.R. 4480:

The AIA does not favor H.R. 4480. In establishing a federal insurance program, the bill would provide only for the development of a mitigation plan after the insurance program is in place, and provides no requirements, only considerations, as to the plan's content. Moreover, there is no requirement, only encouragement, that anyone actually adopt the plan. There are no incentives for mitigation built into the new insurance program, only a requirement for the study of incentives.

We believe that this bill, as introduced, will do little to promote the seismic-sensitive building construction, retrofit, or community planning necessary to save lives and reduce property damage. It may even encourage the construction of buildings that are ill-suited for their locations in earthquake-prone areas. Without mitigation requirements with any strength, the legislation also has the potential of exposing the insurance program to unnecessary federally underwritten losses.

However, the main focus of H.R. 4480 appears to be ensuring the continued viability of the insurance industry in the face of claims incurred under a catastrophic earthquake. While mitigation is to be studied and "encouraged," it is not tied to the accessibility of insurance. This makes sense neither to the insurance industry nor to the federal government. The insurance industry should look again at the precedents of fire insurance.

10. Conclusion:

Seismic improvement of the building stock in our seismic-risk areas must be seen as a long term, generational problem. The existing building stock is only slowly replaced by new construction. On a national basis, new construction adds about 2 percent a year to the building inventory.

An effective national earthquake insurance scheme could assist in reducing life loss and property damage. Insurance must be tied to mitigation requirements, otherwise insurance would become a substitute for mitigation and the basic objectives of insurance

would not be realized. With a mitigation requirement, insurance will provide an incentive for innovation in the development of earthquake hazard mitigation systems, components, and materials by developing a nationwide market for such items. In turn, such development could relieve the insurance industry of some of its present concerns about the earthquake insurance problem.

It is not unreasonable, if good seismic construction were to begin immediately and the most hazardous existing buildings were to be strengthened, to look forward to a situation in which the next generation would be living and working in a substantially earthquake resistant environment. The American Institute of Architects, in its commitment to building excellence and a safe environment, would be glad to cooperate with others who share these objectives, and to assist with its technical knowledge of building and the regulation process.

Mr. VALENTINE. Thank you, sir.
Dr. Beavers?

STATEMENT OF JAMES E. BEAVERS, CORPORATE FELLOW, MARTIN MARIETTA ENERGY SYSTEMS, INC.

Mr. BEAVERS. Thank you, Mr. Chairman. It's a pleasure for me to appear before you and the subcommittee this morning.

Today I am also representing the Earthquake Engineering Research Institute, which represents experts in the fields of engineering, geoscientists, architecture, planning, public policy, and social science.

My testimony is based on the approved policy statement by the Board of Directors, and I would like for this to be entered into the record. It is attached to my written statement.

Mr. VALENTINE. Without objection.

Mr. BEAVERS. Thank you.

Ten thousand deaths, 30,000 injuries, 1 million homeless, $70 billion in damage, and 200 billion in direct losses could result from earthquakes in the Central and Eastern United States. We are not prepared. A National Earthquake Insurance Program, combined with a mitigation element, would be the beginning of a long-term activity, to protect our citizens and reduce economic loss.

In your letter of invitation, I was asked to comment on the lack of earthquake preparedness in this country. I believe that five reasons predominate.

First, until recently, the Federal Government had failed to set a good example for the private sector. Just six months ago, federally-funded buildings were not required to meet adequate standards.

Second, our citizens, including scientists and engineers, do not fully understand the threat and the potential economic impact of an earthquake.

Third, unlike tornadoes, earthquakes do not occur frequently enough in the Central United States, to remind our citizens that the earthquake threat does exist.

Fourth, business and community leaders believe that adopting seismic standards for new construction will make their communities less competitive. I quote from a letter written on January 22, this year. It goes: "Section 1206 of the 1988 addition of the Standard Building Code is unreasonable and unrealistic with respect to its application to West Tennessee. Unrealistic and unwarranted building requirements will result in unrealistic and unwarranted building costs, and higher rents, and will make our State less attractive to new business."

These are some of the issues that we face in our communities.

The fifth and final reason that I will cite for our lack of preparedness is the human nature element. The "It can't happen to me syndrome." Although we may not be able to do much about that syndrome, we can eliminate the other reasons for lack of preparedness. The President has taken the first step by recently signing the Executive Order requiring all new Federal and federally-funded buildings to be designed for seismic loads. I believe the key to the second, third, and forth reasons I have suggested is educa-

tion. We must educate our citizens about the earthquake threat and the associated cost.

And you've heard some testimony this morning that talked about the need for education.

Mr. Chairman, the United States must be prepared. The bottom line is that the engineering profession has the basic technology of cost-effective, earthquake hazard mitigation, waiting in the wings to be applied to new construction, but, to be effective, it must be adopted and enforced. However, when it comes to saving lives and reducing economic loss, such measures will not play a significant role in accomplishing these goals for the next 25 years, because of our existing building stock.

In California, this stock includes buildings that were constructed before the 1940s, and for the remainder of this country, it includes most of the buildings being constructed today.

In Tennessee, Mr. Chairman, I recently witnessed the completion of a new five-story, 122-room hotel, constructed of unreinforced masonry.

There are 185,000 unreinforced masonry residential structures in St. Louis.

For commercial and industrial structures, the cost to retro- fit can vary from anywhere from three dollars to a hundred dollars per square foot, and cost is the main issue that rises where discussing mitigation activities for residential dwellings.

A single-family dwelling, constructed of unreinforced masonry, is an unsafe structure in a seismically-active area, and should be upgraded, however, the owner may not be able to afford the upgrade cost. Therefore, when we call for mitigation activities for existing structures, we must approach this issue very carefully to avoid negative reactions by our citizens to the long-term goals of a National Earthquake Insurance Program, with mitigation.

Although I support a bill that requires a mitigation component, I am also concerned that this component be achievable and does not put undue financial stress on the owners to give them protection by means of a National Earthquake Insurance Program.

In the draft FEMA study that you have heard talked about this morning, loss reduction measures were identified that can be relatively cost-effective, be adopted and enforced by State and local Governments, save lives, and reduce economic losses.

However, as a member of the Advisory Panel to that study, I will be the first to tell you that the engineering profession will not necessarily agree with all the facets of those loss reduction measures until the report is published, reviewed, and a consensus approach adopted. The FEMA study represents a major step, but a broader consensus must be developed to move forward on a mitigation plan that encompasses these loss reduction measures.

An example: One loss reduction measure could be interpreted as requiring zoning ordinances, subdivision ordinances, and other techniques to control new development in landslide and liquefaction-susceptible zones in Memphis and Shelby County. I don't deny that Memphis and Shelby County should be developing such a land use plan, but I now believe that a near-term requirement, to have such a plan in place, and implemented before earthquake insurance can be purchased, would be an unfair burden on the public.

Between the two bills being considered, I believe H.R. 4915 will be more effective in improving the earthquake preparedness of this country.

The Earthquake Engineering Research Institute has gone on record in support of mandatory mitigation elements. As Dr. Elliott Mittler of the University of Southern California has said: "Insurance alone will not slow down, alter, or stop poor design and construction. In fact, the opposite may occur."

Although I support H.R. 4915, the major difficulty I have with the bill is how rapidly and to what degree will communities have to develop and begin enforcing detailed mitigation plans before they can qualify to participate in an insurance program. H.R. 4915 also requires that no seismically-hazardous structure may be eligible for insurance.

Mr. Chairman, I ask, what is a seismically-hazardous structure? Based on my experience, I now believe that if we evaluate all of the existing buildings east of the Rocky Mountains, according to the nationally-accepted evaluation methodology in place, as many as 85 percent of our buildings could be found to seismically-hazardous.

As Dr. Robert Hanson of the National Science Foundation has said, "It is physically and economically impossible to upgrade all vulnerable systems throughout the United States before the next earthquake occurs."

I believe that we must proceed cautiously as we developed the mitigation requirements that must be in place. We also must use the lessons learned from the National Flood Insurance Program that you've heard talked about this morning, which I believe provides us with a base of experience for developing a good National Earthquake Insurance Program.

Mr. Chairman, the Earthquake Engineering Research Institute and I cannot support a bill with a mitigation element, and there is no excuse for not including the adoption and enforcement of a seismic building code for new construction today. Undoubtedly, insurance program with a strong mitigation element, if properly developed, will significantly improve this country's long-term earthquake preparedness. It will not happen overnight, and we are kidding ourselves if we believe otherwise. However, the time to start is now.

In closing, understanding the earthquake threat and the implementation of preparedness throughout the United States is a complex and difficult issue. However, with appropriate efforts, great strides can be made to mitigate the threat. Even where great strides have been made in earthquake preparedness as in San Francisco, we have still seen the amount of devastation that can occur.

I believe that a National Earthquake Insurance Program will be the springboard for mitigation activities of the future. We must effectively utilize our resources, we must continue to conduct research, and we must begin to take action to provide safety for our citizens, and to reduce economic losses.

We have one of the most important action items on the agenda today, a National Earthquake Insurance Program, with a sound mitigation element.

Thank you.

[The prepared statement of Dr. Beavers follows:]

Testimony of
Dr. James E. Beavers
Corporate Fellow
Martin Marietta Energy Systems, Inc.
to
The Subcommittee on Science, Research and Technology
of the
Committee on Science, Space and Technology
U.S. House of Representatives
July 26, 1990

Thank you, Mr. Chairman, and Members of the Subcommittee:

It is a pleasure for me to appear before the Subcommittee on Science, Research and Technology in support of earthquake insurance and hazard mitigation. Today I am proud to say that I am not only speaking for myself but also for the Earthquake Engineering Research Institute (EERI), which represents the "earthquake industry" with over 1,700 earthquake experts in the fields of engineering, geoscience, architecture, planning, public policy, and social science. My testimony is based on the approved policy statement by the EERI Board of Directors, and I request that this statement be included in the record (see Attachment).

My strong interest in the earthquake risk to this country and the need for adoption of a national earthquake insurance program is a direct result of the following: (1) my current membership on the Committee on Earthquake Engineering of the National Research Council of the National Academies of Sciences and Engineering; (2) my past chairmanship of the Advisory Panel to the administration's feasibility study on a national earthquake engineering experimental facility; (3) my service as a member of the Federal Emergency Management Agency's (FEMA) Advisory Panel for a study entitled "Loss-Reduction Provisions of a Federal Earthquake Insurance Program"; (4) my service to EERI as a member of its Board of Directors and editor of its professional journal, *Earthquake Spectra*; (5) my concern about the rapid slippage of this country's world leadership role, not only in the manufacturing sector of which we are all painfully aware, but in the service sector of the engineering and scientific professions; and (6) most of all, my concern for the safety and welfare of the citizens of this country.

This morning you have heard testimony on the need for a national earthquake insurance program and earthquake mitigation activities. It is a fact that if the scientific and engineering professions are to reduce the loss of life of our citizens and damage to our industries and cities when destructive earthquakes occur, we must have a strong program for implementing mitigation activities and understanding earthquakes through research and development. We have had a decade of marvelous success with the National Earthquake Hazards Reduction Program (NEHRP), but we cannot stop to rest. Much is yet to be done, as demonstrated by the October 17, 1989, Loma Prieta earthquake near San Francisco. NEHRP must continue to do its work, which we hope will be expanded in the 1990s. For without such expansion, we will be guilty of shortsightedness. As a result, we will continue to hold our citizens hostage to a threat that can be mitigated, and our country will continue to decline in the international marketplace. In this most important arena of mitigation, a national earthquake insurance program may provide the springboard that has been so long needed. If such a program is properly developed, it will increase the number of lives saved in the next big earthquake.

As has been said many times, 39 states in this country are at risk from damaging earthquakes. We all recognize the seismic risk associated with living in California and other areas in the West. However, Mr. Chairman, as I have said in previous testimony, even with the great strides of NEHRP, the public is still painfully unaware and unprepared for a damaging earthquake in other areas of the United States, especially the central and eastern U.S. During the winter of 1811 to 1812, the central U.S. was torn asunder by 18 earthquakes. Three of these were "great" earthquakes with estimated Richter magnitudes greater than 8.0, five had magnitudes greater than

7.0, and ten greater than 6.5. Unfortunately, the public has no memory of that devastating winter because the area was virtually uninhabited at the time. For in 1820, 8 years after the earthquakes, the recorded population of Shelby County, Tennessee, was only 354. Today, Mr. Chairman, we have 800,000 people living in Shelby County, over 1.3 million in western Tennessee, and over 40 million in a region that is at risk. As Dr. Arch Johnston of the Center for Earthquake Research and Information in Memphis has testified previously, the likelihood of a damaging earthquake in the next 30 years is approximately 60% (see Bibliography). I have been told that the likelihood of the Loma Prieta earthquake was projected at being only 30% in the following 30 years--yet it occurred on October 17, 1989.

In addition to the New Madrid seismic region east of the Rocky Mountains, the Appalachian Region was the site of an earthquake with an estimated Richter magnitude of 6.0 in 1897 in Giles County, Virginia--an earthquake fault that is believed capable of a magnitude 7.0. Two hundred miles southwest of Giles County, an area in eastern Tennessee is known as a "hot spot" of seismic activity and is also within the Appalachian Region. Other areas in the East are also at risk. The Charleston, South Carolina, area was the site of an earthquake with an estimated Richter magnitude of 7.7 in 1886, resulting in over 60 deaths, and the New England area experienced the Cape Ann earthquake of about 6.5 magnitude in 1755. Furthermore, an earthquake near the St. Lawrence Seaway in Canada could have damaging effects on areas of the Northeast, even New York City.

Unfortunately, as I stated in my March 29, 1990, testimony before the Senate Subcommittee on Science, Technology and Space, we do not have as good an understanding of the probability of a damaging earthquake occurring in other areas of the central and eastern U.S. as we do in the New Madrid area. In the American Association of Engineering Societies (AAES) publication of 1986 entitled "*Vulnerability of Energy Distribution Systems to an Earthquake in the Eastern United States--An Overview,*" the statement is made that the probability of a damaging earthquake occurring somewhere in the eastern U.S. within the next 25 years is nearly 100%--an almost sure thing. In the context of this statement, a damaging earthquake is defined as one having a Richter magnitude of 6.0 or greater, the eastern U.S. is defined as east of the Rocky Mountains, and the occurrence of a damaging earthquake includes the likelihood of an earthquake in Canada causing damage in this country. Since that time, others have used this projection in their testimony, and it was reported in the *Wall Street Journal* on July 11, 1989. Although this projection was based on the scientific work that had been done in New Madrid, the basis for it was more intuitive. Although such a risk projection may not be based solely on scientific computation, seismologists, geologists, and earthquake engineers all agree that there is indeed significant risk. More recently, simple probability calculations show that the risk of an earthquake occurring at magnitude 6.0 or greater is about 80% when Canada is included.

I submit to you, Mr. Chairman, that although we do not know the exact risk of a damaging earthquake occurring in the central and eastern U.S., we do know that this risk must be reckoned with by adopting earthquake hazard mitigation measures to save lives and reduce economic costs. A national earthquake insurance program could speed up this process. We must not forget that there are a few major differences between an earthquake in California and one in the central and eastern U.S. That is, the affected area will be 10 to 20 times greater in the East compared with California for an earthquake with the same magnitude. California has used seismic design and

has had seismic building codes and building parapet retrofit ordinances for years. Additionally, we must not forget that 80% of the U.S. population lives east of the Rocky Mountains and 60% east of the Mississippi River. Depending on the epicenter of the earthquake in the East, thousands or tens of thousands more people could be significantly affected than from a similar earthquake in California.

A study conducted by FEMA of six cities in the central U.S. concludes that nearly 5,000 deaths, 20,000 injuries and 500,000 homeless would result from a magnitude 8.6 earthquake, and it has been estimated that the direct damage would exceed $50 billion. In addition, the effects of this earthquake in St. Louis could cause over 1,000 deaths, 4,000 serious injuries, 400,000 homeless, and over $6 billion in direct damage. For a repeat of the Charleston earthquake of 1886, a similar study has shown that in a three-county area the number of deaths would exceed 2,000, and the direct damage would exceed $2.6 billion; and a repeat of the 1755 Cape Ann earthquake could result in hundreds of deaths and $5 billion in damage. The 1986 AAES study indicated that people hundreds of miles from the ground-shaking effects of a major earthquake in the East could be directly affected due to the disruption of pipeline transmission systems. For example, if the natural gas pipeline route along the East Coast were disrupted by an earthquake in South Carolina, 260,000 residential consumers in South Carolina, 300,000 in North Carolina, 480,000 in Virginia, 850,000 in Maryland and the District of Columbia, and 3.9 million in New York could experience a shortage of natural gas.

The damage associated with earthquakes has recently been etched in our minds by the vivid pictures of death and destruction resulting from the Loma Prieta earthquake. The failure of the Nimitz Freeway (I-880) comes vividly to mind for many of us when the Loma Prieta earthquake is mentioned. This earthquake caused 67 deaths and 2,435 injuries. Furthermore, the direct damage has been estimated at $5.6 billion. I have heard projections that the total direct damage could exceed $10 billion.

As I have indicated in previous testimony based on what we have just seen in San Francisco and other recent earthquakes around the world, I believe that the damage estimations for New Madrid and Charleston may underestimate the effects of such earthquakes, especially for Charleston. Its 1886 damage was estimated at $5 million in 1886 dollars. The study *Estimating Losses From Future Earthquakes* by the National Research Council concluded, "using the best of today's methods and the most experienced expert opinion . . . property loss estimates are often uncertain by a factor of 2 to 3, and estimates of casualties . . . can be uncertain by a factor of 10." Although the estimated property losses from a catastrophic earthquake in the central U.S. could be double the current estimate of $50 billion, this estimate does not include the indirect losses--the ripple effect. In a Japanese paper that will be published in EERI's professional journal, a methodology is presented for calculating expected indirect losses and is demonstrated by using the 1983 Nihonkai-chubu, Japan, earthquake of Richter magnitude 7.7. This earthquake caused direct losses of only 148.2 billion yen (1983 yen), whereas the indirect losses were 371 billion yen--nearly three times higher than the direct losses. Extrapolating from these data, the total economic loss to the central U.S. from a catastrophic earthquake in New Madrid could exceed $200 billion.

To have a totally effective mitigation program, we need to understand the potential economic impact of indirect losses, and, as we all know, these indirect losses directly affect the insurance industry. Preliminary estimates of the indirect losses resulting from the Loma Prieta earthquake range from $10 to $20 billion. However, Mr. Chairman, we were lucky in the Loma Prieta earthquake. If the duration of strong ground shaking of the Loma Prieta earthquake had lasted the 20 to 30 seconds of a typical California earthquake instead of the actual 10 to 15 seconds, the percentage of unreinforced masonry (URM) buildings damaged in San Francisco may have been 50 to 75% rather than the actual figure of 25%. Instead of the estimated direct damage being $5.6 billion, it could well have been $10 to $20 billion. Then what about the indirect losses? If we apply the methodology mentioned previously, the indirect losses could be upward of $30 to $60 billion. San Francisco was 60 to 70 miles from the epicenter of the Loma Prieta earthquake, yet significant losses occurred to a city that, in my opinion, was relatively prepared.

I submit to you the question, Mr. Chairman: What is going to happen if such an earthquake were to occur east of the Rocky Mountains in New Madrid, or Charleston, or just across the Canadian border? Approximately 3 million people are within a 75-mile radius of any point of the New Madrid fault. Memphis and Shelby County are only 30 miles from the fault zone; Paducah, Kentucky, is less than 60 miles; Cairo, Illinois, is on the fault; Cape Girardeau, Missouri, is less than 50 miles from the fault; and what about those 50 or so small towns that are dotted along the 200-mile length of the fault? Osceola and Blytheville, Arkansas; Tiptonville and Ridgely, Tennessee; Caruthersville and New Madrid, Missouri; and Hickman and Columbus, Kentucky, to name a few.

Mr. Chairman, the eastern U.S. is not prepared. A national earthquake insurance program combined with a mitigation element would be the beginning of a long-term activity to protect those citizens.

As I described on March 29, 1990, let's look at what might happen in the East from a small earthquake of Richter magnitude 5.5, keeping in mind that the Loma Prieta earthquake was 30 times larger. First, an earthquake measuring 5.5 on the Richter scale is a highly probable event in the eastern U.S. in the next few years and could easily happen tomorrow. For example, the northern Kentucky earthquake of magnitude 5.2 on July 27, 1980, caused over $1 million in damage, and the northeastern Ohio earthquake of magnitude 5.0 on January 31, 1986, likewise caused considerable damage. To explain the damage possible from an earthquake of magnitude 5.5, I described the events of one such earthquake. It was the first fatal earthquake in Australia's history and occurred on December 28, 1989. The earthquake struck Newcastle, Australia, an area similar to many medium-sized cities in the eastern U.S. because the seismic activity of Australia is much like the eastern U.S. Newcastle is in a geographical area known as "Seismic Zone 0", modeled after the U.S. 1976 Uniform Building Code. The panhandle and southern half of Florida, the lower portions of Mississippi and Alabama, and a large southeastern portion of Texas were designated in 1976 as being in Seismic Zone 0. Seismic Zone 0 requires no seismic resistance design. The earthquake in Newcastle caused over 15 deaths, 10,000 buildings suffered significant damage, 25,000 buildings suffered minor damage, and the estimate of direct damage was $1 billion.

Mr. Chairman, an earthquake of magnitude of 5.5 could occur almost anywhere east of the Rocky Mountains. I do not believe there would be much argument about the likelihood of such an event occurring somewhere in the East within the next 25 years. The only arguments would be where, when, and what level of damage could we expect. Would the damage be less than that in Newcastle, or would it be greater? We really don't know. What we do know is that if the earthquake occurs in a lightly populated area, the damage will be less, whereas if it occurs in a heavily populated area, the damage will be much greater. The Newcastle earthquake lasted only 5 seconds. What would the direct damage have been to Newcastle if the earthquake had lasted 10 seconds? $2 billion, $10 billion, or $20 billion? How many more lives would have been lost? What would the indirect cost have been?

The insurance industry would weather through a magnitude 5.5 earthquake as occurred in Newcastle, but lives would still be lost, and many families would suffer major economic losses. To prevent the events of the Loma Prieta and Newcastle earthquakes, cost-effective earthquake hazard mitigation must occur. As I have indicated in previous testimony, one cost-effective measure is the adoption of seismic codes and standards for new construction. However, such efforts are fruitless unless adoption and enforcement occurs. Today only a few areas in the eastern U.S. have adopted such standards, and even fewer have adopted other mitigation activities.

In your letter of invitation, you asked me to comment on the major reasons for the lack of earthquake preparedness in this country. Although many reasons might be cited, and some social scientists devote their careers to studying "lack-of-preparedness" phenomena, I believe that five reasons predominate. First, until recently, the federal government has failed to set a good example for the private sector. Even just 6 months ago, federally funded buildings were not required to meet adequate standards. Second, our citizens, including some of our scientists and engineers, do not fully understand the threat and the potential economic impact of an earthquake occurring in the central and eastern U.S. Third, unlike tornadoes, earthquakes do not occur frequently enough in the central and eastern U.S. to remind our citizens that the earthquake threat does exist. Fourth, the cost of new construction for adopting seismic building codes is perceived to be high. Business and community leaders believe that adopting seismic standards for new construction will make their communities less competitive for new business and development. Concerning the debate for the adoption of a seismic code in Tennessee, I quote statements made by the opposition on January 22, 1990: "Section 1206 of the 1988 edition of the *Standard Building Code* is unreasonable and unrealistic with respect to its application to West Tennessee, and . . . this Section should not be adopted and promulgated by the state of Tennessee . . . . Unrealistic and unwarranted building requirements will result in unrealistic and unwarranted building costs and higher rents, and will make our state less attractive to new business." The fifth and final reason that I will cite for our lack of preparedness is the human nature element: the "it can't happen to me" syndrome.

Mr. Chairman, although we may not be able to do much about that syndrome, we can eliminate the other reasons for lack of preparedness that I have mentioned. The President has taken the first major step. I applaud the President for signing Executive Order 12699 on January 5, 1990, requiring all new federal and federally funded buildings to be designed for seismic loads. This order

will indeed set an example for the public sector to follow. I strongly believe that the key to the second, third, and fourth reasons I have listed is education. We must educate our citizens about the threat of earthquakes and their associated costs. Only through education will we obtain success. This hearing is an excellent form of education. The Congress represents the leadership of this country, and until the leadership understands the issues, no action will be taken. I applaud you, Mr. Chairman, your fellow Congressman, and your staff for calling this hearing. We will all learn as a result.

Mr. Chairman, the United States must be prepared. The bottom line is that the engineering profession has the basic technology of cost-effective earthquake hazard mitigation waiting in the wings to be applied to new construction, but to be effective, it must be adopted and enforced.

Although I encourage the adoption of seismic codes and standards for new construction, when it comes to saving lives and reducing economic loss, such measures will not play a significant role in accomplishing these goals for the next 25 years. The reason for this delay has been explained in previous testimony by Dr. Robert Hanson of the National Science Foundation (NSF) (see Bibliography). He has pointed out that the real vulnerability in the United States lies in the existing building stock that was constructed with no seismic provisions, especially URM. In California, this stock includes buildings that were constructed before the 1940s, and for the remainder of this country, it includes most of the buildings being constructed today. In Tennessee, Mr. Chairman, I recently witnessed the completion of a new 5-story, 122-room motel constructed of URM. There are 185,000 URM residential structures in the St. Louis area. In a recent NSF workshop, 28 earthquake engineering experts concluded that the first priority for earthquake research is improving our understanding of the seismic performance of URM structures, and our second priority is nonductile reinforced concrete structures.

As I have said before, until we fully understand the performance of such structures, we will not fully understand the vulnerability and the risk to the nearly 200 million people of this country who live east of the Rocky Mountains. We must also keep in mind that URM construction is used almost exclusively throughout the 15,000 school districts in the United States that house the 40 million students in grades K through 12. In the Memphis area alone, it is estimated that the number of deaths among school children will exceed 1,100 if a major earthquake were to occur during a school day. And, Mr. Chairman, we don't want an event similar to the one that occurred not long ago in Armenia to occur in the United States. Thousands of schoolchildren died in the Armenian earthquake of Richter magnitude 6.9 on December 8, 1988, as a result of the collapse of 171 K through 12 school buildings. Therefore, in addition to adopting codes and standards for new construction, we must continue conducting research, and we must focus on mitigation techniques for the existing inventory, URM buildings, nonductile reinforced concrete structures, bridges, pipelines, and so forth. The results of the NSF workshop and other workshops will help us to design a road map that will identify specific mitigation techniques needed for the eastern U.S., leading us to more cost-effective retrofit techniques.

Unfortunately, in comparison with the adoption of codes and standards for new construction as cost-effective mitigation, the existing building stock presents us with a much greater engineering, social, and economic challenge. What are we going to do with our unreinforced buildings that are almost everywhere in seismic areas of the East? What are we going to do about our nonductile reinforced concrete frame buildings? Are we going to abandon them? Are we going to upgrade them? Can we afford either choice? One thing we do know, based on the retrofit ordinance in Los Angeles, is that retrofit for typical buildings constructed of URM costs between $6 to $20 per square foot. A report on the bill S.1062 quotes $3 to $13 per square foot. For a small grocery market of 2,000 square feet, retrofit could easily cost $20,000. This cost is often a major economic burden on the owner. But we can learn from the California experience because such techniques might be applicable to the more hazardous buildings in the seismic zones across the rest of the country. However, the simple fact is that the cost of retrofit depends on both the structure of the building and the seismic hazard level that it must meet. For example, the cost to seismically retrofit the Veterans Administration Hospital (a critical structure) in Charleston in the 1970s was approximately $35 per square foot in 1985 dollars. I also have experience in performing studies for critical structures for which the retrofit cost can easily approach or exceed $100 per square foot. In the Whittier Narrows earthquake that occurred in Whittier, California, in 1987, many buildings constructed of URM had been retrofitted and they did their job--they provided safety. However, many sustained serious damage that was expensive to repair. The issue of retrofit is a complex one, and only through education, research, and study can we minimize the cost of retrofit while maximizing gains in earthquake preparedness--first for safety and second for economy. Unfortunately, I believe we have a long way to go before we resolve this issue.

In testimony entitled, *Field Hearings on the Loma Prieta Earthquake: Lessons Learned*, which dealt with buildings constructed of URM, Mr. Chris Poland of H. J. Degenkolb Associates made the following statements: "A clear understanding of why many of these buildings performed successfully when others did not will greatly assist in the evaluation and hazard mitigation of URM throughout the country. It is to our advantage to refine our thinking about which URM buildings are safe enough as is, and, therefore, do not need to be strengthened." He also stated, "The cost of improving the seismic performance of an inventory of buildings is strongly influenced by the ability of the evaluation methodologies to predict which buildings are hazardous and why. The high cost of any earthquake hazard mitigation program demands that only the truly hazardous buildings are strengthened and only in their areas of greatest vulnerability. This need makes this a high-priority research task."

The examples of retrofit cost that I have just discussed apply primarily to commercial and industrial structures, but the same issues arise when discussing mitigation activities for residential dwellings. A single-family dwelling constructed of URM is an unsafe structure in a seismically active area and should be upgraded. However, the owner may not be able to afford the cost to upgrade the dwelling. Therefore, when we call for mitigation activities for existing structures, we must approach this issue very carefully to avoid negative reactions by our citizens to the long-term goals of a national earthquake insurance and mitigation program. Although I support a bill that requires a mitigation component, I am also concerned that this component be achievable and does not put undue financial stress on the owners to give them protection by means of a national earthquake insurance program.

In the draft report of the FEMA study conducted by Dames and Moore entitled *Loss Reduction Provisions of a Federal Earthquake Insurance Program*, loss-reduction measures (LRMs) were identified that can (1) be relatively cost effective, (2) be adopted and enforced by state and local governments, (3) save lives, and (4) reduce the economic costs of a major earthquake. However, as a member of the Advisory Panel to that study, I will be the first to tell you that except for the LRM that calls for adopting building codes for new construction, the engineering profession will not necessarily agree with all the facets of these LRMs until the report is published, reviewed, and a consenses approach adopted. Mr. Chairman, I believe that although state and local governments must have mitigation plans before they can qualify for earthquake insurance, and although those plans must include the adoption of seismic design requirements for new construction, we cannot approach the existing structure issue too strongly; and as we all know, land-use planning is another controversial issue. I believe that state and local governments must begin to develop land-use plans, but the implementation of such plans should not necessarily be a prerequisite to qualify for insurance.

In the FEMA study, 4 land-use and 11 building LRMs--described as "promising"--were developed. The FEMA study represents an excellent piece of work and a major step, but a broader consensus must be developed to move forward on a mitigation plan that encompasses LRMs. An example is land-use LRM 2, which can be interperted as requiring zoning ordinances, subdivision ordinances, and other techniques to control new development in landslide- and liquefaction-susceptible zones in Memphis and Shelby County. I don't deny that Memphis and Shelby County should be developing such a land-use plan, but I now believe that a near-term requirement to have such a plan in place and implemented before earthquake insurance can be purchased would be an unfair burden on the public. Where are our communities going to get the funds to determine the liquefaction potential of their land areas? To determine the liquefaction potential of a 750 acre site in Kentucky with which I am familiar, the costs were about $250,000, not including mapping requirements. Shelby County consists of over 1 million acres. Our state and local governments will have enough difficulty setting aside funds to develop general mitigation plans. In addition, a bill requiring a stringent mitigation approach will undoubtedly meet heavy resistance from the development and building industry.

Based on my statements above, it is obvious that of the two bills being considered, H.R. 4915 and H.R. 4480, H.R. 4915 will be much more effective in improving the earthquake preparedness of this country. EERI has gone on record in support of a strong mitigation element (see Attachment). A national insurance program without a mitigation element will not effectively improve our earthquake preparedness, and, I believe, will actually result in a state of less preparedness. As stated by Dr. Elliott Mittler in his draft assessment of these two bills, "insurance alone will not slow down, alter, or stop poor design and construction . . . or construction of structures in . . . unstable hillsides and liquefaction zones. In fact, the opposite may occur . . ." (see Bibliography).

Although I support H.R. 4915, the major difficulty I have with the bill, as I have alluded previously, is how rapidly and to what degree will communities have to develop and begin enforcing detailed mitigation plans before they can qualify to participate in a national earthquake insurance program. Although the National Institute of Standards and Technology (NIST) is responsible for developing

mitigation criteria, such criteria can only be generalized at best. NIST does not have the resources or funds to determine land-use requirements for a specific community. In fact, this bill gives NIST more responsibility without mentioning the funds required to carry out such activities. H.R. 4915 also requires that "no seismically hazardous structure may be eligible for insurance". Mr. Chairman, I ask, "What is a seismically hazardous structure?" Based on my experience, I now believe that if we evaluate all of the existing buildings east of the Rocky Mountains according to the Applied Technology Council's (ATC) nationally accepted evaluation methodology ATC-14, as many as 85% could be found to be seismically hazardous. As Dr. Hanson of the NSF has said, "it is physically and economically impossible to upgrade all vulnerable systems throughout the United States before the next earthquake occurs."

As noted earlier, Dr. Mittler has made a comparison of these two bills, including a bill being proposed by the Honorable Nancy Pelosi, using 23 criteria. Table 1 summarizes the results of Mittler's criteria comparisons between H.R. 4480 and H.R. 4915. For the criterion "Primary Focus", Mittler's comparison shows that H.R. 4480's focus is "primary insurance and reinsurance" while H.R. 4915's focus is "hazard mitigation." Undoubtedly, a national earthquake insurance plan is needed, and from that perspective alone I could support both bills. However, hazard mitigation must be a primary or major focus (that is, mitigation of some form must be required). As a result, I also support H.R. 4915 over H.R. 4480 in three of Mittler's other criteria entitled "Local Eligibility Requirements," "Method of Enforcement," and "Ineligible Structures." Under another criterion, "Method of Compliance," Mittler shows "none given" by either bill. I believe that a method of compliance should be included as part of earthquake insurance legislation. In the remainder of Mittler's criteria I have no strong opinions about which of the two bills is better. In general, it appears that for most of Mittler's criteria, there is room for some level of compromise.

Mr. Chairman, while I generally support H.R. 4915, I believe that we must proceed cautiously as we develop the mitigation requirements that must be in place to allow participation in a national earthquake insurance program. We also must use the lessons learned from the National Flood Insurance Program (NFIP), which provides us with a base of experience for developing a national earthquake insurance program and understanding the difficulties of enforcing such a program. A bill for a national earthquake insurance program must avoid the pitfalls we have encountered with NFIP, for without such avoidance we will not achieve our long-term goals.

Mr. Chairman, EERI and I cannot support a bill without a mitigation element, and as a minimum, that element must include the adoption and enforcement of a seismic building code for new construction. One lesson we have learned from the Loma Prieta earthquake is that the central and eastern U.S. must be prepared. The structures designed for earthquakes in San Francisco performed very well in the Loma Prieta earthquake, but that city has been using seismic design for 40 years. San Francisco was prepared. It has had a seismic building code since 1927; it has one of the best water distribution and fire protection systems in the United States; it had completed an earthquake emergency drill just 3 weeks before the earthquake; and it has had a building parapet retrofit ordinance in place since the 1970s. Even with this level of preparedness, San Francisco still experienced significant damage. In this respect, San Francisco and California apparently have some way to go with mitigation.

Undoubtedly, a national earthquake insurance program with a strong mitigation element, if developed properly, will significantly improve this country's long-term earthquake preparedness. It will not happen overnight, and we are kidding ourselves if we believe otherwise. However, the time to start is now.

In closing, Mr. Chairman, understanding the earthquake threat and the implementation of preparedness throughout the United States is a complex and difficult issue. However, with the appropriate resources, great strides can be made to mitigate the threat. Obviously, the adoption and enforcement of cost-effective seismic building code provisions for new construction is a first step. I believe that a national earthquake insurance program will be the springboard for mitigation activities of the future. Even where great strides have been made in earthquake preparedness, as in San Francisco, we have still seen the amount of devastation that can occur. As Dr. Ian Buckle of the National Center for Earthquake Engineering Research has said about the Loma Prieta earthquake, "In the final analysis, we were really lucky; however, the earthquake showed us that we don't know as much as we would like to think we know." Throughout the United States we must continue to be vigilant, and we must never take the earthquake threat lightly. We must effectively use our resources, we must continue to conduct research, and we must begin to take action, not only to provide safety for our citizens and to reduce the economic losses of a damaging earthquake, but to help maintain our global competitiveness. For without being globally competitive, we may not be able to effectively provide the other two. We have one of the most important action items on the agenda today--a national earthquake insurance program with a sound mitigation element. The members of EERI and I stand ready to serve. Thank you.

Table 1: COMPARISON OF H.R. 4480 AND H.R. 4915*

CRITERIA	HR 4480	HR 4915**
Legislative sponsor	Al Swift and David Dreier	George Brown
Author	The Earthquake Project --	George Bernstein
Basis	(None)	Flood Insurance Act
Primary focus	Primary insurance and reinsurance	Hazard mitigation
Secondary focus	Hazard mitigation	Primary insurance and reinsurance
Disasters covered	Earthquakes and volcanic eruptions	Earthquakes
Agency in charge	Federal Earthquake Insurance and Reinsurance Corporation	FEMA
Director	Director, FEMA	Director, FEMA
Composition of board	11 members, including 4 from insurance industry	15 member advisory committee including 1 insurance industry member
Insurance rates	Established by Corporation; can be risk based	Risk based
Method of compliance	None given	None given
Local eligibility	None	Local adoption and enforcement of LRMs
Risk determination	Decision of Corporation	Maps
Method of enforcement	None mentioned	Federal instrumentalities
Notification procedure	By private insurance company	By mortgage lender

Table 1: COMPARISON OF H.R. 4480 AND H.R. 4915 (cont'd)

CRITERIA	H.R. 4480	H.R. 4915
Incligible structures	None	Those in violation of state or local laws or in nonparticipating communities
Residential insurance limits	None	$50,000 and up to $125,000 additional rates
Federal reinsurance obligation	95% in excess of 8% of net written premium	90% in excess of 10% of net written plan
Co-insurance	5%	10%
Private insurance company involvement	No new arrangement	Those representing 80% of homeowners net written premium must participate
Losses in excess of fund	90% borrowing from Federal Treasury; 10% paid by insurance companies; payback from future premiums	100% borrowing from Federal Treasury; no payback procedures
Recommended mitigations	National seismic standards; Community-based building codes; Retrofitting; License design professionals Mandatory pre-sale inspection of structure	Detailed mapping; Control development in high risk areas; Retrofitting; Brace water heaters; Mandatory pre-sale inspection of structure
Fiscal incentives to adopt mitigations	Lower property tax Possible lower deductibles or premiums	Lower deductibles

*Taken from Mittler, E., *Evaluating Alternative National Earthquake Insurance Plans*,DRAFT, July 1990.

**H.R. 4915 was first introduced as H.R. 4462 and was so noted by Mittler.

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ATTACHMENT

EARTHQUAKE ENGINEERING RESEARCH INSTITUTE

EARTHQUAKE INSURANCE POLICY

Potential economic losses from earthquakes are likely to escalate dramatically in coming years as a result of increasing development and population growth in seismically active area. A national insurance program, that would pair legal and financial incentives to individual and community based earthquake hazard reduction programs, has the potential to generate increased seismic awareness and concern. However, to be effective as a mitigation tool, earthquake insurance must be tied to stringent building codes, design, and land use regulations. The failure to couple the availability of affordable insurance with mandatory mitigation measures could actually encourage development of seismically vulnerable construction in high risk areas.

Mr. VALENTINE. Thank you, Doctor Beavers.
Mr. Jones?

STATEMENT OF GERALD H. JONES, P.E., DIRECTOR OF CODES ADMINISTRATION, KANSAS CITY, KANSAS CITY, MISSOURI

Mr. JONES. Thank you, Mr. Chairman. I'm Gerald Jones, the Director of Codes Administration for the City of Kansas City, Missouri. I'm the local building official who Mr. Bernstein referred to as having the regulations crammed down my throat, so I am very familiar with the feeling. I am the, "Where the rubber meets the road," if you want to use a cliche, where all of these regulations must be enforced and made to happen or not happen, as the case may be.

The amount of time we're talking today on mitigation, I think a couple of definitions might be in order, or perhaps not definitions as much as description.

New buildings are relatively easy to regulate, because we can control them through the permitting process, and the adoption of adequate codes and standards can be used to addressed new construction, and, parenthetically, I would say that's also true of the Flood Insurance Program currently in effect. I think the buildings constructed under that program, have, in fact, performed quite well, when subjected to floods.

However, any new building, very shortly after I issue a Certificate of Occupancy, is an existing building, and any code that is kept current, is revised on a periodic basis. The three model codes are reviewed annually, changes are made annually, and new editions are published on a three year cycle. This is true of most other standards that we use in the building industry. In fact, those standards that are not updated periodically, quickly become out of date.

That means, very simply, that, every time we change a provision in the code, we've created a family of non-conforming buildings out there. Some changes are minor and some change are major. So the issue of non-conforming buildings is not new or unique to the seismic program. It applies to flood, it applies to fire, it applies to every other provision in the building codes when we change those provisions.

Historically, and, I believe, properly legally, when you build something that conforms to the code at the time you build it, you are, in fact, entitled to a useful life of that building, without have to rebuild the world every year when we come out of our Model Code Changes Program. Hopefully, we do improve the codes as we move along.

So the magnitude of the existing building problem has to be put into the context, and the term, "Bring it into code compliance", is loaded, because code compliance can mean a lot of things.

Therefore, when we deal with mitigation on existing buildings, the trigger mechanism becomes the most critical issue that we've got to deal with. I'm afraid that I'm here with more problems than I am solutions. In the flood program, the term "substantial improvement" was used as a trigger mechanism—50 percent substantial improvement.

Well, we live in a real world, and people know how to twist words, and I'm sure what the intent was, but, literally, the definition of "substantial improvement" meant spending money and doing something. In fact, as flooding occurred, we found people collecting the money—either Federal Disaster Assistance or insurance proceeds—they'd take the money and run. I go knock on their door and say, "You've had a $35,000 loss, you must now elevate this structure." The guy says, "I didn't do anything to it. I hosed it out and moved back in." Well, the current regulations in the Flood Program changed in November of last year, changed the definition to "substantial damage". There's a difference. Now we have proof that damage has occurred, and a trigger mechanism can be created.

However, expand that to other types of remodeling on the buildings. And I will indicate that when the suburb that I was a building official in when the Flood Program first came down the road, tried to do more than the minimum Federal requirements, we ran into a stone wall, for the simple reason that, once a building is legally non-conforming, by whatever law you pass, damage from any hazard, triggers the upgrade.

Now we're in tornado country, and the lending agencies looked around, and suddenly in my community of about 85,000 at that time, we had about four or five hundred houses that were in a clearly-defined floodplain. Not a flood way, but the floodplain.

The lending agencies said, if we have a tornado or a fire, and those properties are damaged, it doesn't have to be from flood, and now all of a sudden we've lost all of our equity in those existing buildings, and so the community simply came back and said, "Do what is mandatory. No more, no less", and that's where we started out.

Now I would also like to compliment the Flood Program on one additional improvement that they've made, and its taken several years to do, but I understand why.

They have taken a page from the fire insurance rating system, and are now just starting a program of rating communities for premium risk. In the old days, if you had a certain type of fire department, and a certain kind of hook and ladder, and you had a certain water supply, you, your community was upgraded from a Class 10 to a Class 7, and your insurance premium rates went down. They're starting to do that now in the flood program. And, therefore, a community who wishes to do more now has some incentive to do it. Now you can tell the lending community that, hey, it's important to add this additional layer of protection into the program, because we can knock all of the insurance premiums down by 10 percent, 20 percent, or whatever the number might be, so I applaud them in that respect. It is just starting.

I want to second several things that the previous speakers have said. There have been some comments this morning about the lack of provisions in a couple of the model codes. That is partially true and partially not true.

The—Both the BOCA Code and the Southern Code have significant seismic requirements in them. There are currently projects underway to bring them almost fully into compliance with the NEHRP provisions, but they currently do have provisions in them.

They are based on what was the nationally-accepted standard—A58—ANSI A58, for structural loads. That standard did not update, and therefore these two codes, whose process is to adopt national standards, and not put text in their document, are now having to write the NEHRP provisions into the text of their document, because the National Standard has not updated. That accounts for part of the "delay".

The other element that I think is critical is that, as the jurisdiction adopts the model code, it must also adopt the zone that they are in.

Years before I came to Kansas City, we settled the earthquake question very simply. We just took ourselves out of the zone, when we adopted the Uniform Building Code, we just said, "We're in Zone 0". That took care of the problem. Now they didn't—

Mr. VALENTINE. I have to say this while it's on my mind. We have a mechanism—I shouldn't say this for the Federal Government, because that covers a lot of areas—but, in the State of North Carolina, when I served in the General Assembly, we had a mechanism that took care of budgetary problems called an estimate, as to future revenues. If you—Rather than raise taxes, they just raised the estimate as to what was coming, and that took care of it.

Mr. JONES. So part of the Building Seismic Safety Council's efforts with FEMA over the 13 years that were referred to earlier, was to provide a lot of background information, so that when we went to a community, and said, "It's time for you to adopt seismic standards," they at least had the economic and the social-economic background to know why they needed to go ahead and adopt that.

You got me wound up, so I'll back down and wait for questions.

[The prepared statement of Mr. Jones follows:]

STATEMENT OF GERALD H. JONES, P. E.
DIRECTOR OF CODES ADMINISTRATION
CITY OF KANSAS CITY, KANSAS CITY, MISSOURI

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY
OF THE
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

JULY 26, 1990

Mr. Chairman and members of the Subcommittee, I thank you for the opportunity to explore with you the appropriate role of earthquake hazard mitigation in federal earthquake insurance legislation. My name is Gerald Jones and I currently serve as the Director of Codes Administration for the City of Kansas City, Missouri, a position that I have held since its creation in February 1984. I also serve as the Chairman of the Building Seismic Safety Council, a voluntary, independent membership body established in 1979 under the auspices of the Congressionally-chartered National Institute of Building Sciences as an entirely new type of instrument for dealing with the complex regulatory, technical, social, and economic issues involved in developing and promulgating building earthquake hazard mitigation regulatory provisions that are national in scope. In the past, I have served on the Board of Directors and as President of the Building Officials and Code Administrators, International (BOCA). Over the years I have served on many BOCA technical committees, as Chairman of the BOCA Building Code Changes Committee, and as moderator of their public hearings on code changes. I have also served on the Board of Directors and as President of the Council of American Building Officials (CABO); on the CABO Board for the Coordination of the Model Codes (BCMC); and on the CABO One and Two Family Dwelling Code Committee.

In his letter of invitation to testify at this hearing, Chairman Valentine requested that I comment on several particular questions and suggested that I feel free to address any other aspects of the earthquake insurance problem that I feel germane to the objectives of the hearing; I will do so in that order. My comments will be my own; time did not permit ensuring that I could speak on behalf of any other organization. However, my comments will be founded on the numerous experiences that I have encountered during the many years that I have been associated with building code development and regulation adoption and implementation.

What have been the major obstacles to adopting appropriate seismic building codes throughout the U. S., and east of the Rocky Mountains in particular?

The question itself could be construed by some as implying that few, if any, jurisdictions throughout the U. S. adopt and enforce building codes that include seismic provisions. While there may be a dearth of accurate information on the extent of adoption and implementation of seismic codes, I hope that what I am about to say will convince you that, while obstacles and concerns do, in fact, exist, far more is being accomplished than the question would seem to indicate.

You are likely quite aware that a building code is intended to ensure that a building or facility is so located, designed, and constructed that, if it is subjected to natural or man-made destructive forces, it will present no particular threat to the life, health, and welfare of its occupants or the general public. In other words, a building code is intended to ensure uniform minimum standards of health and safety with reasonable economy and to obviate the need for expensive and difficult studies based on first principles for every building project, large or small.

The regulation of building construction has been a matter of public concern in all civilized countries for thousands of years. Thus, building regulation reflects the

fundamental duty of government to protect the people and their property from harm. On this concept rests the doctrine of "police power," the right all states possess to protect the general health, safety, and welfare through appropriate legislation. In the United States, building regulations generally are an expression of the police power of government, which the *Constitution* has reserved to the states. Many states have delegated this function in whole or in part to their political subdivisions (namely, cities, counties, villages, towns, and numerous special districts); therefore, the building regulatory system is necessarily involved with "home rule" concepts and has evolved with different traditions and to different degrees in various localities or regions.

The basic home rule concept of U. S. building regulations has resulted in the establishment of regional associations of building officials that have developed standardized or "model" codes or series of basic building regulations. Today, there are three major model building code organizations active in the United States: the Building Officials and Code Administrators International (BOCA), which produces building and other codes for the Northeast and Midwest; the International Conference of Building Officials (ICBO), which produces similar codes for the West and Midwest; and, the Southern Building Code Congress International (SBCCI), which produces similar codes for the South and Southwest. All these organizations publish documents and provide educational and technical support services vitally necessary to make the home rule system work constitutionally and efficiently.

Over the years, some have focused more or placed greater emphasis on the development of seismic requirements than others because of the very nature of the geography of the areas they serve and the expanding bank of information concerning potential ground motion. While not to the same extent, all three model code organizations now include seismic design requirements. I would like to note that the National Building Code produced by BOCA (the code with which I am most familiar) has been adopted by 10 states as mandatory statewide building regulations.

Despite local differences in procedures and methods, virtually all segments of the building regulatory system function in a fairly consistent manner.

At present, however, many if not most communities throughout the U. S. still have the right to determine if and what they wish to govern or control, and to what extent, through building regulation and enforcement. These local decisions must be political because they involve judgements concerning the level of risk to be taken by a community (the acceptable level) and the costs and benefits of building code adoption. If a community decides that it should have a building code, it can: develop its own code; adopt one of the three available model codes in its entirety; or, use a model code as a foundation upon which to build its own code by making modifications that include the levels of performance to be sought given the community's historical and political character and the requirements that necessarily will be imposed to achieve that performance.[1] As a resource to assist model code organizations, and communities, in considering and establishing building regulations to reduce the impact of the earthquake threat, the *NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings* were developed and widely disseminated. These *Recommended Provisions* were initially developed by the Applied Technology Council and, since 1982, have been subjected to a continuing updating and refinement process by the Building Seismic Safety Council with support provided by FEMA. The model code organizations are all actively involved in the process as well as in improving their codes to include the currently recommended seismic provisions.

During its activity to stimulate widespread application of the *Recommended Provisions*, the BSSC attempted to identify the major obstacles to or concerns about

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[1] *Local Building Codes and The Use of Cost-Saving Methods*, Richard Duke SOURCE: Staff Report of the Bureau of Economics to the Federal Trade Commission, 1988

adopting, enforcing, and/or applying the *Provisions* as perceived by the various decision makers involved in the building process in a variety of communities that are believed to be at some degree of seismic risk but at the time either had not adopted or did not enforce seismic safety regulations. I would like to share with you the obstacles/concerns related during that effort along with those encountered during my own experiences with and involvement in the building regulatory process.

It is not a simple task for a community to evaluate the probable effects of introducing into the building regulatory process or design practice new or improved seismic design requirements like those included in the *Recommended Provisions*. From what can be determined, adoption or enforcement of seismic codes by communities has varied considerably:

- Communities like some in California that are used to experiencing small to moderate seismic events are continually aware of the threat and already have taken some protective measures; to those communities, any changes in their current regulations likely would have to be justified by a soundly based cost-benefit analysis - a complex and timely process.

- Communities in seismic risk areas with no memorable seismic experience often have little, if any, concern for regulating the quality of their buildings. Some probably could never be convinced, short of an actual damaging earthquake, that any change in the status quo, regardless of its potential advantages, would be worth the effort. (This is sometimes referred to as the "ho-hum" syndrome.)

- The conscientious community that falls somewhere between these two types will have to keep in mind that bringing about change in local practices undoubtedly will have differing effects on various segments of the

community, some of which will generate considerable interest, and others, serious concern.

The concerns (pros and cons) about adopting seismic code provisions most often voiced during the BSSC program by those involved in the building design or regulation decision-making process can be expressed as follows:

DO SEISMIC DESIGN REQUIREMENTS REALLY WORK? HOW DO WE KNOW? AND IF WE DON'T, WHY SPEND THE MONEY AND CHANCE THE PROBABLE IMPACT ON THE COMMUNITY?

These are tough questions to address in those portions of the country that have little, if any, experience or memory of an earthquake occurrance, especially if their economy is already suffering. However, experience in recent earthquakes offer convincing proof that properly designing buildings to meet a modern seismic code will dramatically reduce the impact of an earthquake.

DOES SEISMIC DESIGN AND CONSTRUCTION COST A LOT?

Although the main purpose of seismic design is to save lives and prevent injuries, the decision to design against earthquakes and to establish seismic design standards often is based on economic considerations: By how much can we afford to reduce the risk of damage to our building? Because modern facilities are very expensive to build and operate, the economics of seismic design are particularly critical. It is widely believed that seismic resistant design and construction are extremely costly. Although it is generally true that some increase in design and construction costs is involved, available data indicate that it is not nearly so great as is sometimes argued. In fact, earthquake resistance need not be expensive, and, seismic safety provisions, when incorporated in a sound design from the very beginning of the planning effort by a competent team, actually increase the construction cost only about 1.5 percent.

Beyond the consideration of life loss, seismic design may limit damage to such an extent that repairs needed after a rather severe seismic event may be relatively negligible. Economic analysis on a conventional real estate basis can provide some useful guidance concerning the effects of seismic design on building economics.

WHAT ABOUT RESPONSIBILITY AND LIABILITY?

Questions of responsibility and liability are very real ones even if there are no clear cut answers.

Structural engineers participating in the BSSC program have expressed considerable concern about professional responsibility. Several have voiced strong opinions about their professional obligation to advise a client about the need for seismic-resistant design if such is not required by the governing building code. On the other hand, many architects and engineers also were concerned about the costs in time and dollars associated with acquiring the knowledge essential to sound seismic design. The introduction of seismic design/construction provisions into design practice or a building code that includes no seismic considerations undoubtedly will require many practice changes. The *NEHRP Recommended Provisions* outlines a 13-step process for use in the design and detailing of buildings, most of which could be relatively new to many experienced engineers and architects. During the early phases of a BSSC trial design study, concern was expressed about the lack of seismic design knowledge and experience of some of the engineers in the employ of contractors selected by BSSC to design the hypothetical buildings. However, knowledge and familiarity obviously increase with each design performed. Further, both the BSSC and other technical groups have been and continue to offer courses on application of the *Provisions*.

In addition, many of those responsible for or associated with decision-making in the building process are becoming quite concerned about the liability risks, although they

cannot yet be quantified, that should be considered. It is our understanding that, as soon as the earthquake threat is identified and means of reducing its effect are documented, it can no longer be considered an "act of God" and the owner who makes no reasonable provision for seismic design will be in a very tenuous legal situation when the earthquake occurs. Few data are available that reflect the magnitude of the risks that building decision-makers face in terms of liability for casualties incurred in their buildings during an earthquake, but this will almost certainly be decided by the courts as a consequence of the Loma Prieta event and continue to be appraised after the next earthquake that causes life loss. In fact, it was suggested by one municipal code administrator participating in the BSSC program that the best instructional manual regarding responsibility and liability for building safety would be the proceedings from a local court case.

POTENTIAL JURISDICTIONAL PROBLEMS

An increase in the costs of a new building caused by requiring improved earthquake protection could result in:

- Less new construction and, as a consequence, a reduced supply of housing (especially for the low-income housing market) and commercial and industrial facilities

- Fewer amenities in what is being built

- Businesses deciding to locate in adjacent or nearby jurisdictions where they can build or rent more cheaply

In the last instance, missing out on potential new businesses and the relocation of existing businesses would affect the job market and revenue situation. Questions concerning these matters can be expected to arise in any community surrounded by

jurisdictions with less stringent building regulations or that fall within seismic zones considered to be less hazardous, and they will be especially troublesome in those communities located in a particularly high-risk zone that includes many other communities and perhaps two or more states.

Attempts to introduce seismic design into communities east of the Rockies has met with some criticism from building materials interests. Obviously, some materials do not respond as favorably as others to the impact of seismic loads. Consequently, if seismic regulations are adopted and enforced, those materials will require more reinforcement or other special considerations and become more costly than has been customary, thereby reducing their competitive advantage. In some situations, this could easily result in changes in market share and in the closing of manufacturing plants, layoffs, or both. The substitution of other materials could bring about a significant change in local construction practices and could result in the need for worker retraining. Some capital expenditures for new manufacturing facilities also could be required.

As a consequence, concern about being the "first" and, for a while, the only community in an area to require seismic-resistant construction is very real and responding to it is not easy. The importance of life safety can and must be emphasized, but in areas where earthquakes have not occurred for a long time and general awareness of the earthquake threat is low, jobs and taxes may well be viewed by many citizens to be of much more "immediate" concern. Nevertheless, when an earthquake occurs, the impacts on all community systems (especially the adverse social and economic impacts) and the duration of response and recovery can be reduced considerably because of seismic-resistant structures. Communities that have not experienced a natural disaster may be unaware of the traumas caused by such an event and of the long-term hardships usually endured afterwards; continuing dissemination of such information may be quite persuasive.

THE COST OF DOING NOTHING

A number of other forces can affect the seismic safety decision-making process. For example, in known seismic-risk areas, lenders are beginning to require seismic design and earthquake insurance as a condition for their financial support. Furthermore, many industrial and service organizations are beginning to require seismic protection in their facilities. It is becoming increasingly important to those businesses and organizations that rely on sophisticated electronic and computer equipment to avoid operational interruptions and shutdowns. To them, ensuring seismic resistance in their structures is a very small price to pay given what they would lose from a major disruption of their operations. Also, some buildings house priceless art or historic treasures that could never be replaced if the building collapsed; indeed, protecting such treasures might stimulate a community to adopt even more stringent seismic safety requirements that cover nonstructural as well as structural components.

In short, there are many reasons for safeguarding a building, and these reasons continue to be acted on whether or not a community has seismic-resistant construction standards and whether or not those standards are enforced.

With respect to other potential effects, all of the possible outcomes are not yet known. Seismic-resistant design and construction are obviously already occurring with few, if any, adverse impacts in California where they are required by a statewide code as well as in areas without seismic code requirements. Therefore, it may be fair to assume that many of the changes resulting from seismic-resistant design and construction will be absorbed in time just as are other changes resulting from new technology.

With respect to the second question - *Of the two bills under consideration, which would be more effective in increasing earthquake preparedness in the U. S. through seismic code implementation and other related measures?*

Please understand that I have not had an opportunity to study the two bills closely, nor speak to those who have. However, my initial observations lead me to believe that H. R. 4915 would be the most effective. Both address the need for mitigation measures; however, H. R. 4915 will require such measures as a condition of insurance while H. R. 4480 makes adoption of those measures voluntary. As I mentioned earlier, because of a variety of very real political concerns and pressures compounded by the lack of awareness, understanding, and acceptance of the earthquake threat in many parts of the country, it is unlikely that voluntary implementation will take place in the near future as a result of incentives that are less than those included in H. R. 4915. In the event of an earthquake, the Federal Government will be expected to provide relief funds. If there is no concerted effort to mitigate the effects of an earthquake, then obviously the damage will be greater and the cost to the Federal Government will be greater. If mitigation efforts have been taken, in all likelihood the damage will be much less and the cost to the Federal Government and the tax payer will be much less. This argument does not even take into account the most critical concern - the mitigation of life loss. While some may consider there to be an additional cost to the Federal Government if it should require mitigation in order for a community to participate in an insurance program, the cost to the Federal Government under those circumstances would be far less than the cost of damages to be paid after a quake.

Requiring mitigation may increase the cost of housing, but it should also reduce the cost of insurance premiums.

Furthermore, while, as currently written, H. R. 4480 emphasizes the establishment of a corporation, it includes no recognizable program for providing the technical support and other related activities essential to acceptance and implementation of mitigation measures building on what has been accomplished to date.

I do suggest, however, that those responsible for preparation of H. R. 4915 keep the following in mind:

The research and development efforts funded by FEMA and other NEHRP agencies are leading to building code requirements that will mitigate earthquake effects in new construction. Continuing efforts should lead to even better and more cost effective mitigation procedures in the future for both new and existing construction. FEMA has taken the approach that it should work with and through the private sector (as it has with the Building Seismic Safety Council) and the model codes and voluntary standards system existing in the country; the approach led to the development of consensus in the building community regarding the types of provisions that should be required for new construction. As a consequence, its effort is truly bearing fruit and some relatively giant strides have been taken in establishing technical procedures for improving the seismic resistance of new buildings. It is my understanding that a similar approach is planned and underway for existing buildings and I anticipate similar progress with regard to existing buildings in the not too distant future.

In this light, I ask that you keep in mind that, while there is great appreciation throughout the building industry for the research done at NIST, there also appears to be little desire in the building community for NIST to actually develop building criteria, standards, and code provisions. The NIST role as presently articulated in H. R. 4915, could result in a significant reposturing of the cooperation by some elements of the private sector that all parties are now enjoying. I believe that most segments of the private sector involved in the

34-218 - 90 - 6

development of seismic provisions would prefer that NIST expand its most vital role in the conduct of problem focused research. To date, FEMA has demonstrated a comprehension of the need for incorporating the building community into the process and doing so in a very open manner.

Mr. VALENTINE. Thank you, sir.
Mr. Ross?

STATEMENT OF RICHARD D. ROSS, PRESIDENT, NATIONAL EMERGENCY MANAGERS ASSOCIATION AND DIRECTOR, MISSOURI EMERGENCY MANAGEMENT AGENCY, JEFFERSON CITY, MISSOURI

Mr. Ross. Thank you very much, Mr. Chairman.

On behalf of the National Emergency Management Association, I certainly welcome this opportunity to bring up the end of the testimony today. My fellow members of NEMA are the directors of the State Emergency Management Agencies, and they're responsible for coordinating, guiding, and supporting State Emergency Management Programs.

We certainly construe the earthquake threat clearly as a national problem, and one which will continue to require great Federal support and attention in the 1990s and the 21st century.

As a Missourian and a former chairman of the Central United States Earthquake Consortium, I will share some examples from my own Emergency Management Agency, and our neighboring CUSEC States, to make my points.

As many as 12 million people residing in the Central United States could be affected by a strong New Madrid Fault or other seismic zone earthquake epicentered in our region. With only modest Federal funding in recent years, some $3.5 million total to the six States—or seven States, rather—in the Central United States, we have made tremendous strides in addressing the earthquake potential, and increasing the level of preparedness.

For example, as a product of the efforts, my own State recently, this year, passed an omnibus seismic safety bill, has been hailed as a quite significant piece of legislation—maybe the most significant piece of legislation, from the Missouri's 85th General Assembly. This new statute was signed into law on July 5th by Governor Ashcroft. Addresses the needs for seismic building provisions in the City of St. Louis, in St. Louis County, and some 46 other counties in Eastern-Southeastern Missouri, most likely to be affected by earthquakes, not including Kansas City, I might add.

In these counties, the statute requires appropriate seismic design and construction for all new buildings, and major renovation of buildings, of 10,000 square feet or more.

The statute also requires, incidentally, that every school district establish an earthquake emergency procedure, and that an earthquake exercise be held at least twice a year in the schools.

This bill certainly represents an excellent first step towards securing a seismically-safe environment for countless Missourians, but it is but one.

In terms of earthquake hazard reduction measures, the bill simply focuses on new construction, and thus does not address seismic safety provisions or thousands of existing buildings, including critical facilities, such as hospitals, senior citizen centers, schools, and day care centers, nor to residential property. As we have mentioned so many times already today, cities throughout the Central U.S. are lined with hundreds, yea, thousands of buildings con-

structed with unreinforced masonry. Major cities, such as—and we always begin with Memphis if we're in Missouri—Louisville, Chicago, and St. Louis, are just a few key examples with a high number of these unprotected structures.

Missouri and the surrounding Central U.S. States have made substantial progress. In key areas, earthquake preparedness include earthquake response plans, public education, and awareness to seismic threat, earthquake mitigation and preparedness training for a wide range of groups, and multi- state, interstate planning and coordination for the earthquake threat, principally through the leadership and support of CUSEC and the seven States' governors.

For the most part, our progress has been tortuously slow and difficult, certainly in the areas that we are discussing here today. With our best gains made on the heels of public alarm and interest after major earthquakes—such as, of course, Loma Prieta, Soviet Armenia, Iran, and, in recent days, the Philippines. Still, the greatest challenge for most of our earthquake prone States across the country lies squarely in the area of meaningful Hazard Mitigation Reduction Programs. And, again, as we have discussed today, little is being accomplished outside California in the area of structural mitigation to protect existing and particular older structures from serious, life-threatening damage in an earthquake.

The problem almost equally applies to new construction in scores of States where local or statewide ordinances and statutes do not exist for seismic building codes and other mitigation measures.

Impediments to this crucial process are varied and complex. They—certainly in my area and Central United States—include one confusion, and, in fact, an empirically built mythology by builders, planners, and others; and, I might add, when I'm not in government, I'm in all of those categories—regarding the cost of seismic design features and new construction, to the fact of greater expense to retro-fit existing older and poorly-built structures, particularly as pointed out by Dr. Beavers.

Three: Apathy on the part of the public, and communities at large; and,

Four: It ain't gonna happen here.

H.R. 4915 addresses all of these issues and more, and, as I see it, the best opportunity to bring national sanity to construction and reconstruction in earthquake prone areas of our country in this century. It challenges the mythology of exorbitant additional costs and seismic construction. More importantly, it will ultimately save lives and property, and lessen the enormous disruption of normal activities seen most recently in Armenia, Iran, and the Philippines.

H.R. 4915 is the best opportunity to make mitigation national, and to potentially lessen the enormous economic, and personal dislocations, a major earthquake will have in this country. To not strongly tie mitigation to insurance would miss the greatest opportunity of this century, to ultimately make America an earthquake ready society.

Finally, my association would not, in these fiscally stressed times, ever ask the Congress to assume new risks without taking attendant major steps to reduce those risks.

The major question here is not whether we ought to have a Federal Earthquake Insurance Program, which is also tied to Mitigation and Hazard Reduction Measures, that need is readily apparent.

A mandatory program through the Federal Government, in cooperation with the States, may well be the only means we have to move ahead, with earthquake safety and seismic provisions nationwide.

The lack of such construction, even in public buildings across the country, bears witness to this national need for mandatory provisions. They are once again best incorporated under H.R. 4915, which has the greatest potential to reduce earthquake casualties, damages, and seismic design claims, while substantially lowering the Federal liability for disaster assistance in such a catastrophe.

Mr. Chairman, this concludes my testimony.

[The prepared statement of Mr. Ross follows:]

TESTIMONY BY RICHARD D. ROSS

EARTHQUAKE HAZARD MITIGATION IN FEDERAL EARTHQUAKE INSURANCE LEGISLATION

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY

July 26, 1990

JUL 25 '90 17:26 816 627 4553 PAGE.002

Mr. Chairman, on behalf of the National Emergency Management Association (NEMA), I welcome the opportunity to testify before all of you today on the issue of federal earthquake insurance and earthquake hazard reduction measures. NEMA's members are the directors of State Emergency Management Agencies, and are responsible for coordinating, guiding and supporting state emergency management programs.

Since thirty-nine states in this country are at moderate to high risk from the occurrence of a damaging earthquake, NEMA construes the earthquake threat clearly as a national problem and one which will continue to require greater federal support and attention in the 1990s.

As requested in your invitation to testify, I would

JUL 25 '90 17:26 816 627 4553 PAGE.003

like to concentrate my remarks on the major obstacles we in the emergency management community face with respect to implementing seismic safety and design codes for buildings, structures and facilities in earthquake risk states. As a Missourian and former board chairman of the Central United States Earthquake Consortium (CUSEC), I will share some examples from my own State Emergency Management Agency and our neighboring CUSEC states. I will also testify briefly on how we can best remove many of these impediments to seismic safety and other earthquake hazard reduction measures through legislation being reviewed today.

SCOPE OF THE EARTHQUAKE THREAT

A major earthquake in the Central United States represents the greatest single natural disaster which residents of the Mississippi Valley states are likely to

JUL 25 '90 17:27 816 627 4553 PAGE.004

face in their lifetimes. Such an earthquake could affect as many as 22 states and far exceed the level of damage we have seen with similar size earthquakes such as Loma Prieta and other seismic disasters in California. As many as 12 million people residing in the Central United States could be affected by a strong New Madrid Fault or other seismic zone earthquake epicentered in this region.

With only modest federal funding in recent years, key states in the Central U.S. have made tremendous strides in addressing the earthquake potential and increasing the level of preparedness over the last five years. Missouri's omnibus seismic safety bill, passed during this last session of the State Legislature, has been hailed as the most significant piece of legislation from our 85th General Assembly. The new statute, signed into law on July 5th by Governor Ashcroft,

JUL 25 '90 17:27 816 627 4553 PAGE.005

addresses the need for seismic building provisions in the City of St. Louis, St. Louis County, and 46 other Missouri counties most likely to be affected by earthquakes. In these counties, the statute requires appropriate seismic design and construction for all new buildings, and major renovation of buildings, of 10,000 square feet or more. The statute also requires that every school district establish an earthquake emergency procedure, and that an earthquake exercise be held at least twice a year in these schools.

This bill represents an excellent first step toward securing a seismically safe environment for countless Missourians. It is but one of many steps Missouri and other states threatened by earthquakes need to take in order to better prepare our communities from such a catastrophic event in the years ahead. However, in terms of earthquake hazard reduction measures, the bill

JUL 25 '90 17:28 816 627 4553 PAGE.006

simply focuses on new construction and thus does not address seismic safety provisions for thousands of existing buildings, including critical facilities such as schools, hospitals, day care centers, nursing homes, etc., at risk to an earthquake. Cities throughout the Central U.S. are lined with hundreds of buildings constructed with unreinforced masonry - a design at highest risk to earthquakes. Major cities such as Memphis, Louisville, Chicago and St. Louis are just a few key examples with a high number of these unprotected structures.

MAJOR OBSTACLES TO SEISMIC SAFETY AND EARTHQUAKE HAZARD REDUCTION MEASURES

Missouri and surrounding Central U.S. states have made substantial progress in key areas of earthquake preparedness. They include earthquake response

JUL 25 '90 17:29 816 627 4553 PAGE.007

plans, public education and awareness to the seismic threat, earthquake mitigation and preparedness training for a wide range of groups, and multi-state, intra-state planning and coordination for the earthquake threat, principally through the leadership and support of CUSEC. For the most part, our progress has been torturously slow and difficult, with our best gains made on the heels of public alarm and interest after major earthquakes such as Loma Prieta, Armenia, Iran, and the Philippines.

Still, the greatest challenge for most of our earthquake-prone states across the country lies squarely in the area of meaningful hazard mitigation reduction programs. Currently, little is being accomplished outside California in the area of structural mitigation to protect existing and in particular, older structures from serious, life-threatening

JUL 25 '90 17:29 816 627 4553 PAGE.008

damage in an earthquake.

This problem almost equally applies to new construction in scores of states where local or statewide ordinances and statutes do not exist for seismic building codes and other mitigation measures. Impediments to this crucial mitigation process are varied and complex. They include:

1) Confusion, and in fact empirical mythology by some builders and planners regarding the cost of seismic design features in new construction (generally estimated at 1-2% of the project cost).

2) A greater expense to retrofit existing older and poorly built facilities without tax breaks or other financial incentives.

3) Apathy on the part of the public and communities at large toward the earthquake threat.

4) The misbelief that while earthquakes occur, they

JUL 25 '90 17:30 816 627 4553 PAGE.009

will not strike in the community or region currently unprotected in terms of hazard reduction measures.

HR 4915 addresses all these issues, and more, and is, as I see it, the best opportunity to bring national sanity to construction and reconstruction in earthquake prone areas of our country in this century. It challenges the mythology of exorbitant additional costs in seismic construction. More importantly, it will ultimately save lives and property and lessen the enormous disruption of normal activity seen most recently in Armenia, Iran and the Philippines. HR 4915 is the best opportunity to make mitigation national and attendantly lessen the enormous economic and personal dislocations a major earthquake will have in this country. To not strongly tie mitigation to insurance would miss the greatest opportunity of this century to ultimately make America an earthquake ready society.

9

Finally, my Association would not, in these fiscally stressed times, ever ask the Congress to assume new risks without taking attendant major steps to reduce those risks.

The major question here is not whether we ought to have a federal earthquake insurance program which is also tied to mitigation and hazard reduction measures - that need is readily apparent. A mandatory program through the federal government, in cooperation with the states, may well be the only means we have to move ahead with earthquake safety and seismic provisions nationwide. The lack of such construction, even in public buildings across the country, bears mute witness to this national need for mandatory provisions. They are once again best incorporated under HR 4915, which has the greatest potential to reduce earthquake casualties, damages,

JUL 25 '90 17:31 816 627 4553 PAGE.011

and seismic damage claims, while substantially lowering the federal liability for disaster assistance in such a catastrophe.

This concludes my testimony.

JUL 25 '90 17:31 816 627 4553 PAGE.012

Mr. VALENTINE. Thank you, Mr. Ross. Thank all of you very much.

How many major earthquakes have occurred in, say, Charleston, South Carolina, in the little over 200 years of the life of the Republic? Is it one?

Mr. BEAVERS. Basically one, 1886. Magnitude about 7.5.

Mr. VALENTINE. And in this New Madrid, Memphis area, how many major earthquakes?

Mr. BEAVERS. Well, if you go back to 1811, 1812, there were, of course, three big ones of a magnitude of 8 or above; during a three-month period, there was something like five, greater than magnitude 6; and something like 13 greater—I'm sorry—5 greater than magnitude 7; and about 13 greater than magnitude 6. That was a major catastrophic event in the 1811/1812 time frame.

Since that time, they've had two earthquakes of magnitude 6 in the area; I believe one was 1843, and the second in 1895.

Mr. Ross. Mr. Chairman, the return on the earthquake of 6 or greater is about 95 years, the seismologists, tell us, so we're right at that point now on a return of a 6 or greater.

Mr. BEAVERS. In the Charleston earthquake, some analysis have been done on that recently, shows—I think it was supported by FEMA and others—that there would be, I believe $5 billion in damage, somewhere in the neighborhood of 2,000 lives lost.

Mr. VALENTINE. Of course, the reason that I asked those questions is we are attempting in these bills and other initiatives to direct the Congress to address the problem as a national problem. It is so difficult to sell it to politicians as a national problem, because, for example, Charleston, South Carolina, which is a kind of a second home for me, has experienced severe earthquakes with about the same frequency it has experienced Civil Wars. So, you know, it's hard to get people all shook up about that.

In California, where—and this says something for the caliber of people there—that the population continues to grow right above the fault line.

Mr. CAMPBELL. Reserving the right to object.

Mr. VALENTINE. I mean, I'm not trying to—really, I mean, it's about the high caliber of the people there, because they—but, so, you know, I don't seek to make this a laughing matter, because it's time for some comedy relief, it has been a long—this is a kind of a dreary day for this institution.

But how do we really convince politicians who come here from 50 States that this is really a problem anywhere, except in the San Francisco Bay Area, and other parts of California?

Mr. JONES. At perhaps some risk of jeopardizing some of the other activities I'm taking on, I would like to offer a suggestion, and it's not part of your bill; but we're in a part of the country that sees flood and tornado. But we are susceptible. There have been size 5 earthquakes 60 miles from Kansas City, so we're not—

Mr. VALENTINE. Well, my point, you don't have any trouble convincing people about tornadoes, do you?

Mr. JONES. Correct.

Mr. VALENTINE. Or flood.

Mr. JONES. Now many of the mitigation measures that are appropriate for seismic do wonders for tornado resistance, and if we

could approach some of these items from a multi-hazard approach, we could gain a lot of acceptance that is hard to acquire otherwise.

Now, I understand that. We fund earthquake research. We fund tornado research, and we never really get both of them going in the same circle at the same time. But, in single-family housing—I know there was some research at the University of Kansas recently, that, through wind tunnel studies, showed where houses come unglued. They come unglued at the corners, at the foundations, at the eaves, and at the ridges. Simple techniques of strengthening those points does wonders for tornado, and, guess what? It's the same kind of structural detailing that we find in the seismic design.

I can sell that a heck of a lot quicker as wind resistance than I can seismic. However, who cares? Mother Nature don't care. And so if there's some way we can broaden the scope a little bit, I think we can get a lot better acceptance of some of these measures—

Mr. VALENTINE. Instead of a hearing, Mr. Campbell, on the Earthquake Insurance and Hazard Mitigation Bill of 1990, Earthquake, Tornado, Storm, Flood, et cetera, Insurance and Hazard Mitigation. I think it's a very good point.

Mr. ARNOLD. Mr. Chairman, since 1700, 3,500 earthquakes have been recorded East of the Mississippi River, and, as we know, in New Madrid in 1811, the largest earthquake in the United States occurred. The seismic took very long return periods, but 1811 was a long time ago. We have an identified earthquake problem. About every 25 years a damaging earthquake occurs in the United States.

Now we're not suggesting that the threat is anything like that in California. In California, it is a short-term threat. There are 3,500,000 people in the Bay Area that, last year, experienced a terrifying earthquake. I suspect that in your area no one has experienced a terrifying earthquake. So it's clearly a very different proposition, but there is an earthquake problem. It's identified, and we can do something about it. I would suggest if we don't start doing something about it, you know, quietly and a long-term basis—not on a California basis—you know, then I think, from my viewpoint as an architect and technical person, I would feel remiss. And I think that what's what was suggested.

Mr. VALENTINE. Yes. And I don't want to leave the wrong impression with anybody. We should address the problem. I guess what I meant, what I was trying to say was ask you for some expert assistance as how to go about it, because, like you say, I stood in a place, when I was stationed in the Philippines during the late unpleasantness back in the 1940s, and felt the earth shake beneath my feet, and that is a non-North Carolinian experience. We've got a lot of problems, but that's not one of them.

But, you know, we just think aloud about the ways to refocus the necessity to take some action. Well, I don't want to take—

Mr. BEAVERS. Mr. Chairman, I'd like to make just a couple points there—

Mr. VALENTINE. Yes.

Mr. BEAVERS.—with respect to your question. And, that is, the earthquake in the East—an earthquake in the East will happen. There's no doubt about that. We will have a Government when that happens, and Government will be faced with that earthquake

eventually, and we need to be preparing for it. So that's one thing we need to keep in mind. Now it may not happen in your term or your colleague's term, but it will happen. And I think when the public accepts that fact, then we will start seeing some mitigation activities occurring.

The second thing, which is hard for a lot of people to believe, but I want to point this out—if I had lived in Memphis, Tennessee—I currently live in East Tennessee, just happenstance, but I could be living in Memphis, Tennessee—the chances of me experiencing the—an earthquake, the 1811, 1812 earthquake, one of those earthquake events—is four times higher than me in my home experiencing a tornado. The reason for that is the tornado only hits at one spot, a very localized spot; the earthquake covers a large area.

Scientific calculations show that. When you do the risk analysis of a tornado hitting your home, which is the spot, it turns out that it's four times less than a magnitude 8 earthquake.

Mr. VALENTINE. Mr. Campbell?

Mr. CAMPBELL. Thank you, Mr. Chairman. I'd like to take just a second to underline and agree with your point about expanding the hazards. I've had this thought for some time when these bills were first brought to my attention. It occurred to me we should call them just the way you described them, "The Federal Hazard Mitigation Act," or the "Federal Disaster Assistance," instead of "Earthquake". We would then adjust the insurance premia accordingly. Whether we're speaking about 4915 or 4480.

Suppose, for example, we take the proposal of 4915, which says that you cannot have federally-insured mortgages, unless you comply with certain mitigation; well, then, the mitigation categories would include the local hazards, whether they be flood, earthquake, tornado, or hurricane.

Accordingly, then, I would imagine, that the contribution, which is anticipated by both 4480 and 4915 would be adjusted, according to the risk that you are in.

People who are far from an earthquake fault should not have to participate as much. People, however, who are in a hurricane-prone area, would participate, perhaps as much as I would in California, though I have no hurricanes in California.

So I completely support that, and I just wonder if perhaps you and I might make common cause to our colleagues on this, to approach this on both sides of the aisle, and thereby engage the support of non-Californians. Now I publicly applaud you for the interest you have consistently shown in this problem since I've known you. But I will say this, it's atypical. And I will also say on the record that some of my colleagues have said to me, "Well, we've given all the help we're going to give to California for now," after the Loma Prieta earthquake, and I'm sorry that they've said that.

So we need to engage their interest in a broader way, and I think you've put your finger on it, so count me in in that effort.

I had only one particular question, and it was directed to Dr. Beavers. I read you loud and clear on the strictures of 4915, and, in particular, the obligation that seismically- hazardous structures be identified. I expect, though, that the drafters of the bill—and I was not among them—intended to cover that by the phrase, "To the extent practicable", so let me quote to you what they say.

This is in the standards that are to be adopted.

"Identify seismically-hazardous structures; require to the extent practicable retro-fitting of seismically-hazardous structures with priority given to essential public structures."

So I infer from that that they did show some consideration of the cost, which leads me to suggest, first of all, comment on that any way you'd like, but to suggest that, perhaps being a good Republican and fiscally conservative as I am, that we might read, "to the extent practicable" to mean a cost benefit analysis, so that if we take the numbers that have been talked about here—10 percent, 15 percent—can be saved by a one percent or a .1 percent investment. Well, that would be cost-effective, but other things would not be cost-effective, and, hence, would not be required, given the phrase, "to the extent practicable".

Now that's how I'd like to read this statute, but I'd invite your comment.

Mr. BEAVERS. Well, I agree with you, and I was trying to make a point there that we need to go cautiously and be very careful, and just not accept in the hardline fashion or very stringent fashion. We must be careful, and there's a bunch of loss reduction measures that have been specified, and I think it's how we apply them, and how it's interpreted, and eventually how regulations would end up being written, to enforce this kind of criteria, so I don't disagree.

Mr. CAMPBELL. I'd like to ask one question to the entire panel, and then I'll be done, Mr. Chairman. And this deals with the prediction that Mr. Bernstein gave us in the previous panel, which, at risk of unfair mischaracterization, but I'll try my best to avoid it, would be that, if you adopt a certain standard of mitigation code, which would lead to a reduction in the insurance premium, but you do not mandate a cutoff of Federal insurance, federally-assisted mortgages, et cetera, as 4915 does, you run the risk of actually having less mitigation. Communities would band together, and certain members of the community who don't think they have any risk at all, would lobby that community not participate, lest they be forced to pay something, whereas presently they are paying nothing.

Now I believe I'm doing justice to his argument. I'd like your opinion on that argument; whether you believe that is a correct argument, in your own judgment, or if you interpreted it differently, please go ahead and tell me what you thought he meant? Would anyone on the panel like to speak to that?

Mr. BEAVERS. It wasn't clear to me, and I didn't fully understand the point that was trying to be made myself.

Mr. CAMPBELL. Fair answer. Anyone else have a try at it? If not, California, mostly.

Mr. ARNOLD. I'm not completely sure about the point that Mr. Bernstein was making, but I think the general point, unless insurance is tied to mitigation, it acts as a disincentive to mitigation. I believe that that is true, if one looks at that from an individual viewpoint. If I can obtain low cost insurance for my house without doing anything, why should I do anything?

Mr. CAMPBELL. Let me interrupt just to say that was the moral hazard argument, and that argument I followed, but I believe he

was making a different point. If you have no response to that, I understand that.

Thank you, Mr. Chairman, and one just last comment, if you will, in the light vein that you adopted.

A thought occurred to me. If Charleston, South Carolina has had a Civil War as often as it's had an earthquake, what mitigation steps might we take relative to the Civil War threat? I'd leave that question—

Mr. VALENTINE. Absolutely nothing that would affect Charleston, South Carolina.

Mr. CAMPBELL. I believe that. Thank you.

Mr. VALENTINE. That is, beyond the pale.

Mr. CAMPBELL. Thank you, Mr. Chairman.

Mr. VALENTINE. Let me say to you, again. We appreciate the fact that you are here. I appreciate the fact that our colleague is here, too.

I must say one thing at the conclusion. I appreciate what our friend from California, Mr. Campbell, said, and we will make an effort to expand, to retool this legislation, to maybe make it more acceptable, not only make it more palatable, not just in word but in deed.

As one who has had some experience with some of these forms of insurance we're talking about, I owned a condo on the coast of North Carolina in my other life, and the only insurance to protect against water damage was this Federal Insurance Program, but, you know, to have the benefit of that, the builders of that structure, which was built in the late 1980s, had to do certain thinks that they would not have done ordinarily; set the building back a certain distance from the sea, and not damage, desecrate the sand dunes. When they had to do anything to the earth, the had to do certain things, which would not have been done had it not been for that program, so I suggest to you that there are different types of construction, all along the Carolina coast, at least, and perhaps elsewhere, which are as a result of that type of program.

Thank you all very much. This will conclude the subcommittee's business for the day.

[Whereupon, at 1:14 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

I

APPENDIX

101ST CONGRESS
2D SESSION

H. R. 4915

To amend the Earthquake Hazards Reduction Act of 1977 in order to encourage implementation of research results and other loss reduction measures.

IN THE HOUSE OF REPRESENTATIVES

MAY 24, 1990

Mr. BROWN of California (for himself, Mr. ROE, and Mr. BOEHLERT) introduced the following bill; which was referred jointly to the Committees on Banking, Finance and Urban Affairs and Science, Space, and Technology

A BILL

To amend the Earthquake Hazards Reduction Act of 1977 in order to encourage implementation of research results and other loss reduction measures.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Earthquake Hazards Reduction Amendments Act".

SEC. 2. FINDINGS.

Section 2 of the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701) is amended by adding at the end the following new paragraphs:

"(11) Earthquakes cause great danger to human life and property throughout the United States and threaten nationwide economic disaster.

"(12) Research shows that the probability of major earthquakes is increasing and therefore the Federal Government should intensify efforts in hazard reduction to help ensure the safety of the people of the United States.

"(13) The goals of the Earthquake Hazards Reduction Act of 1977 have not been sufficiently fulfilled, as too few States and local communities have taken action despite knowledge of earthquake hazards.

"(14) Without compelling incentives to reduce earthquake hazards it is unlikely that States and local communities will be prepared for earthquakes, and severe loss of life and property will result.

"(15) Insurance is an efficient and equitable method of compensating for losses, but private insurers are unable to provide the necessary earthquake insurance without Federal Government participation.

"(16) A federally funded earthquake insurance and reinsurance program that does not require hazard reduction measures will increase the risk of loss from earthquakes.

"(17) The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 offer a pattern for encouraging loss reduction by States and local communities and widespread purchase of insurance.".

SEC. 3. DEFINITIONS.

Section 4 of the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7703) is amended—

(1) by redesignating paragraphs (1), (2), (3), (4), and (5) as paragraphs (9), (15), (18), (20), and (21), respectively;

(2) by inserting before paragraph (9), as redesignated by paragraph (1) of this section, the following new paragraphs:

"(1) The term 'community' means any city, town, township, county, parish, village, or other general purpose political subdivision of a State.

"(2) The term 'Director' means the Director of the Federal Emergency Management Agency.

"(3) The term 'earthquake' means an undulating or trembling of the crust of the Earth due to seismic forces, including faulting of underlying rock and volcanic activity and including aftershocks relating to an earthquake.

"(4) The term 'earthquake hazards reduction program' means the national earthquake hazards reduction program under title I, and the term 'principal earthquake hazards reduction program agencies' means the Federal Emergency Management Agency, the National Institute of Standards and Technology, the National Science Foundation, and the United States Geological Survey.

"(5) The term 'earthquake-prone area' means an area identified by the Director under section 202(c) as subject to earthquake hazards.

"(6) The term 'earthquake-prone community' means a community located in an area identified by the Director under section 202(c) as subject to earthquake hazards.

"(7) The term 'Federal instrumentality responsible for the supervision, approval, regulation, or insuring of banks, savings and loan associations, or similar institutions' means the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the Comptroller of the Currency, the Office of Thrift Supervision, the Federal Housing Finance Board, and the National Credit Union Administration.

"(8) The term 'financial assistance for acquisition or construction purposes' means any form of loan,

grant, guaranty, insurance, payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance, other than general or special revenue sharing, that is intended in whole or in part for the acquisition, construction, reconstruction, repair, or improvement of any publicly or privately owned building or mobile home, and for any machinery, equipment fixtures, and furnishings contained or to be contained therein, and shall include the purchase or subsidization of mortgages or mortgage loans.";

(3) by inserting after paragraph (9), as redesignated by paragraph (1) of this section, the following new paragraphs:

"(10) The term 'Insurance Fund' means the National Earthquake Insurance Fund established under section 226(a).

"(11) The term 'insurance program' means the national earthquake insurance program established under subtitle B of title II of this Act.

"(12) The term 'lifelines' means public works and utilities, and includes transportation facilities and infrastructure, oil and gas pipelines, electrical power and communications facilities, and water supply and sewage facilities.

"(13) The term 'net written premiums' means direct and reinsurance premiums received by private insurers, less premiums paid for ceded reinsurance.

"(14) The term 'private insurer' means any insurer or reinsurer in any State, or any branch of any alien insurer licensed or authorized to write property and casualty insurance or reinsurance in any State.";

(4) by inserting after paragraph (15), as redesignated by paragraph (1) of this section, the following new paragraphs:

"(16) The term 'Reinsurance Fund' means the National Earthquake Reinsurance Fund established under section 246(a).

"(17) The term 'reinsurance program' means the national earthquake excess loss reinsurance program established under subtitle C of title II of this Act."; and

(5) by inserting after paragraph (18), as redesignated by paragraph (1) of this section, the following new paragraph:

"(19) The term 'seismically hazardous structures' includes structures with unreinforced masonry bearing walls, tilt-up construction, and nonductile concrete frame buildings, located in earthquake-prone areas.".

SEC. 4. CONFORMING CHANGES.

The Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.) is amended—

(1) by inserting after section 4 the following:

"TITLE I—HAZARDS REDUCTION";

(2) by redesignating sections 5, 6, and 7 as sections 101, 102, and 103, respectively;

(3) in section 101, as redesignated by paragraph (1) of this section—

(A) by striking "Act" and inserting in lieu thereof "title" in subsection (a) and in subsection (j) (1) and (2);

(B) by striking "Management Agency (hereinafter" in subsection (b)(2) and inserting in lieu thereof "Management Agency (hereafter in this title";

(C) by striking "of the Agency (hereinafter referred to as the "Director") in subsection (b)(2);

(D) by striking "and" from the end of subsection (b)(2)(F);

(E) by striking the period from the end of subsection (b)(2)(G) and inserting in lieu thereof "; and";

(F) by adding at the end of subsection (b)(2) the following new subparagraph:

"(H) carry out the insurance program under title II.";

(G) by inserting "and" at the end of subsection (c)(6)(A);

(H) by striking "; and" from the end of subsection (c)(6)(B) and inserting in lieu thereof a period;

(I) by striking subsection (c)(6)(C);

(J) by amending subsection (f)(5) to read as follows:

"(5) the use of the insurance program and the reinsurance program to promote the implementation of loss reduction measures developed under this title;"; and

(K) by striking "paragraph 5(f)(1)" in subsection (h) and inserting in lieu thereof "subsection (f)(1)";

(4) in section 102, as redesignated by paragraph (1) of this section, by striking "5(b)(2)(E)" and inserting in lieu thereof "101(b)(2)(E)"; and

(5) in section 103, as redesignated by paragraph (1) of this section—

(A) by striking "sections 5 and 6" and inserting in lieu thereof "sections 101 and 102" in

subsections (a) (1), (2), (3), (4), (5), (6), and (7); and

(B) by striking "under this Act" and inserting in lieu thereof "under this title" in subsections (b), (c), and (d).

SEC. 5. INSURANCE AND REINSURANCE.

The Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.) as amended by this Act is further amended by adding at the end the following new title:

"TITLE II—INSURANCE AND REINSURANCE

"Subtitle A—Participation in National Earthquake Insurance Program and Adoption of Hazard Reduction Measures

"SEC. 201. TENTATIVE IDENTIFICATION OF EARTHQUAKE-PRONE AREAS.

"(a) NOTICE TO COMMUNITIES OF IDENTIFICATION.—Not later than the expiration of the 1-year period beginning on the date of the enactment of this title, the Director shall publish, in the Federal Register and in widely circulated local newspapers in the applicable area, information tentatively identifying any area subject to earthquake hazards, and shall notify the chief executive officer of each community located in any such area (not already participating in the national earthquake insurance program) of its tentative identification

as an earthquake-prone community and of the criteria for State and local loss reduction measures as provided in section 204. The Director shall publish information tentatively identifying such earthquake-prone areas on a continuing basis as new information regarding such areas becomes available to the Director.

"(b) INITIAL AND ONGOING IDENTIFICATION.—The Director shall—

"(1) identify and publish information under this section with respect to all earthquake-prone areas in the United States not later than the expiration of the 3-year period beginning on the date of the enactment of this title; and

"(2) on a continuing basis, in order to monitor the action of communities in implementing loss reduction criteria under section 204, identify (to the extent practicable) active fault, landslide, site amplification, and liquefaction susceptible zones, and other earthquake related factors within any earthquake-prone area.

"(c) OBTAINING INFORMATION.—In identifying earthquake-prone areas and carrying out this section, the Director shall use information obtained or developed under title I. The Director may also consult with State, interstate, and local officials and agencies, and with the individuals, agencies, and organizations interested in and knowledgable regarding

earthquakes. The Director may also receive information from such parties and may enter into agreements, contracts, and other arrangements with any persons, as the Director determines appropriate.

"(d) DISSEMINATION OF INFORMATION BY DIRECTOR.—The Director shall, from time to time, take any action necessary to make information and data available to the public and any State or local agency or official, with regard to—

"(1) an earthquake hazard as it affects any community;

"(2) the insurance program, and the coverage and objectives of the program; and

"(3) estimated actuarial premium rates and chargeable premium rates under the insurance program.

"(e) DISSEMINATION OF INFORMATION BY LOCAL OFFICIALS.—The Director shall encourage local officials to disseminate earthquake information and data widely within each community, so that interested persons will have an opportunity to bring all relevant facts and technical data concerning any local earthquake hazard to the attention of the Director.

"SEC. 202. PARTICIPATION IN EARTHQUAKE INSURANCE PROGRAM.

"(a) PERIOD AFTER NOTIFICATION.—After notification by the Director under section 201(a) that a community has been tentatively identified as an earthquake-prone community, each such community may apply to participate in the insurance program or, within the expiration of the 90-day period beginning upon such notification, submit technical data sufficient to establish to the satisfaction of the Director that the community is not an earthquake-prone community.

"(b) HEARING TO CHALLENGE DETERMINATION AS EARTHQUAKE-PRONE COMMUNITY.—The Director shall, upon request by any community, grant a hearing or provide for the submission by the community of written and documentary evidence, and shall make a determination upon such hearing or evidence regarding the existence or extent of any earthquake hazards in the particular community.

"(c) FINAL DETERMINATION.—

"(1) JUDICIAL REVIEW.—A determination of the Director under subsection (b) shall be subject to judicial review as provided in section 210 and shall be conclusive for the purposes of this title if supported by substantial evidence in the record considered as a whole.

"(2) FINALITY.—A tentative identification by the Director under section 201(a) shall, upon the expiration of the 90-day period under subsection (a), be consid-

ered a final determination that the community is an earthquake-prone community if—

"(A) the community has not appealed the tentative identification;

"(B) an appeal of the identification is made but the identification is upheld;

"(C) an appeal is made but the court does not stay the determination of the Director, as provided under section 210; or

"(D) a stay of the determination expires.

"(d) PARTICIPATION.—To participate in the insurance program under this section a community shall, not later than the expiration of the 18-month period beginning on the date that the identification of the community by the Director as an earthquake-prone community becomes final under subsection (c), take any action necessary to fulfill the requirements of section 205 and notify the Director of the participation of the community in the insurance program.

"SEC. 203. ADVISORY COMMITTEE.

"(a) APPOINTMENT AND DUTIES.—The Director shall appoint an earthquake insurance advisory committee, and such committee shall advise the Director in the preparation of any regulations issued under this title and with respect to policy matters arising in the administration of this title, and shall perform such other responsibilities as the Director may,

from time to time, assign to the committee. The committee shall continue in existence until terminated by the Director.

"(b) MEMBERSHIP.—The committee shall consist of not more than 15 individuals, not less than 1 of whom shall be selected from each of the following:

"(1) The National Institute of Standards and Technology.

"(2) The National Science Foundation.

"(3) The United States Geological Survey.

"(4) Other Federal agencies.

"(5) State insurance regulatory authorities.

"(6) The insurance industry.

"(7) State and local governments.

"(8) Lending institutions.

"(9) The homebuilding industry.

"(10) Individuals having expertise in any aspect concerning earthquakes, including planners, emergency response experts, scientists, engineers, and other experts.

"(11) The general public.

"(c) COMPENSATION.—Members of the committee may, while attending conferences or meetings of the committee, receive compensation at a rate fixed by the Director that does not exceed $100 per day, including travel time, and while serving away from their homes or regular places of

business may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed under section 5703 of title 5, United States Code.

"SEC. 204. ESTABLISHMENT OF CRITERIA FOR LOSS REDUCTION MEASURES BY THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

"(a) DEVELOPMENT OF CRITERIA.—On the basis of research carried out under title I, and other appropriate information, the National Institute of Standards and Technology, in consultation with the principal earthquake hazards reduction program agencies, the Building Seismic Safety Council, the Interagency Committee on Seismic Safety in Construction, and other appropriate organizations and experts, shall—

"(1) develop comprehensive criteria for State and local land use and management ordinances, building codes, and other loss reduction measures meeting the requirements under subsection (b);

"(2) periodically update such criteria to reflect technical advances designed to reduce losses from earthquakes; and

"(3) provide this information to the Director for use in carrying out this title.

"(b) CONTENT OF CRITERIA.—The comprehensive criteria developed by the National Institute of Standards and

Technology under this section shall require such jurisdictions to adopt measures that will—

"(1) refine identification of earthquake-prone areas by the Director;

"(2) identify, and refine any identification by the Director, of any active fault, landslide, site amplification, and liquefaction zones;

"(3) minimize damage to public utilities, including sewer, gas, electrical and water systems, and other lifelines;

"(4) take into consideration active fault, landslide, site amplification, and liquefaction zones and apply geotechnical techniques to minimize ground failures with respect to new construction and substantial improvement and, to the extent practicable, to existing structures;

"(5) control new development in active fault, landslide, site amplification, and liquefaction zones;

"(6) require design of new buildings to conform to model seismic code provisions;

"(7) identify seimically hazardous structures;

"(8) require, to the extent practicable, retrofitting of seismically hazardous structures, with priority given to essential public structures;

"(9) require securing of building parapets and external ornamentations;

"(10) require bracing of gas water heaters and other measures to reduce the risk of earthquake-induced fires;

"(11) require inspections before transfer of property, with reports to the buyer regarding—

"(A) the adequacy of the anchoring of the dwelling to the foundation;

"(B) the presence of cripple walls;

"(C) the bracing of gas water heaters; and

"(D) identification of other earthquake hazards; and

"(12) improve long-term construction practices and planning in earthquake-prone areas.

"(c) TECHNICAL ASSISTANCE.—The Director shall coordinate with and provide technical assistance to State, interstate, and local officials and agencies, to encourage the adoption and enforcement of State and local loss reduction measures that incorporate the comprehensive criteria developed by the National Institute of Standards and Technology under this section.

"SEC. 205. LOSS-REDUCTION MEASURES REQUIRED FOR PARTICIPATION IN INSURANCE PROGRAM.

"(a) IN GENERAL.—No State or local community (or subdivision thereof) identified as an earthquake-prone area may participate in the insurance program under this title, and earthquake insurance under this title may not be made available in such jurisdictions, unless the Director finds that the appropriate public body has adopted and is enforcing land use and management laws, building codes, and other loss reduction measures that conform with the criteria under section 204.

"(b) JUDICIAL REVIEW.—Any denial by the Director of the participation of any State or community in the insurance program under this title, and any expulsion of any State or community from such insurance program, by reason of subsection (a), shall be subject to review under section 210.

"SEC. 206. PROPERTIES IN VIOLATION OF STATE OR LOCAL LAW.

"Earthquake insurance coverage under this title may not be provided for any property that the Director finds has been declared by an appropriate public body to be in violation of any State or local law, regulation, or ordinance that is intended to regulate or restrict location or construction in earthquake-prone areas.

"SEC. 207. REQUIREMENT TO PURCHASE EARTHQUAKE INSURANCE.

"(a) LIMITATION ON FEDERAL ACQUISITION AND CONSTRUCTION ASSISTANCE.—

"(1) IN GENERAL.—Except as provided in paragraph (2), after the expiration of the 1-year period beginning on the date of the enactment of this title, no Federal officer or agency may approve any financial assistance for acquisition or construction purposes for use in any area that has been identified by the Director as an earthquake-prone area and in which the sale of earthquake insurance has been made available under this title, unless the building or mobile home and any personal property to which such financial assistance relates is, during the anticipated economic or useful life of the project, covered by earthquake insurance in an amount at least equal to its development or project cost (not including estimated land cost) or to the maximum limit of coverage made available with respect to the property under this title, whichever is less.

"(2) EXCEPTION.—Notwithstanding the amount of insurance required under paragraph (1), if the financial assistance provided is in the form of a loan, or insurance or guaranty of a loan, the amount of earthquake insurance required under this subsection shall not exceed the outstanding principal balance of the

loan and shall not be required beyond the term of the loan.

"(b) LIMITATION ON LOANS.—Not later than the expiration of the 1-year period beginning on the date of the enactment of this title, each Federal instrumentality responsible for the supervision, approval, regulation, or insuring of banks, savings and loan associations, or similar institutions shall, by regulation, prohibit such institutions from making, increasing, extending, or renewing any loan secured by improved real estate or a mobile home located or to be located in an area that has been identified by the Director as an earthquake-prone area and in which earthquake insurance has been made available under this title, unless the building or mobile home and any personal property securing such loan is, for the term of the loan, covered by earthquake insurance in an amount at least equal to the outstanding principal balance of the loan or to the maximum limit of coverage made available with respect to the property under the title, whichever is less.

"(c) EXEMPTION FOR STATE PROPERTIES.—Notwithstanding the other provisions of this section, earthquake insurance shall not be required on any State-owned property that is covered under a State policy of self-insurance adequate in the determination of the Director. The Director shall publish and periodically revise a list of States to which this subsection applies.

"(d) NOTIFICATION OF EARTHQUAKE HAZARD AND UNAVAILABILITY OF FEDERAL DISASTER RELIEF.—Not later than the expiration of the 1-year period beginning on the date of the enactment of this title, each Federal instrumentality responsible for the supervision, approval, regulation, or insuring of banks, savings and loan associations, or similar institutions shall, by regulation, require such institutions, as a condition of making, increasing, extending, or renewing any loan secured by improved real estate or a mobile home located or to be located in an area that has been identified by the Director as an earthquake-prone area to—

"(1) notify the purchaser or lessee, or obtain satisfactory assurances that the seller or lessor has notified the purchaser or lessee, of such identification as an earthquake-prone area, in writing, a reasonable period in advance of the signing of the purchase agreement, lease, or other documents involved in the transaction; and

"(2) notify the purchaser or lessee of such property that, in the event of a disaster caused by earthquake to such property, Federal disaster relief assistance may not be available to such property if—

"(A) the community in which the property is located does not participate in the insurance program; or

"(B) such property does not have earthquake insurance coverage in the amount required by this section.

"SEC. 208. EFFECT OF NONPARTICIPATION IN EARTHQUAKE INSURANCE PROGRAM.

"(a) LIMITATION ON FEDERAL ACQUISITION AND CONSTRUCTION ASSISTANCE.—After the expiration of the 18-month period beginning on the date of identification of any area by the Director as an earthquake-prone area, no Federal officer or agency may approve any financial assistance for acquisition or construction purposes for use in such area unless the community in which such area is located is participating in the insurance program.

"(b) LIMITATION ON LOANS.—Each Federal instrumentality responsible for the supervision, approval, regulation, or insuring of banks, savings and loan associations, or similar institutions shall (by regulations issued not later than the expiration of the 1-year period beginning on the date of the enactment of this title) prohibit such institutions, after the expiration of the 18-month period beginning on the date of identification of any area by the Director as an earthquake-prone area, from making, increasing, extending, or renewing any loan secured by improved real estate or a mobile home located or to be located in such area unless the community in

which such area is located is participating in the insurance program.

"SEC. 209. COORDINATION WITH OTHER PROGRAMS.

"In carrying out this subtitle, the Director shall consult with other departments and agencies of the Federal Government, and with interstate, State and local agencies having responsibilities regarding earthquakes in order to ensure that the programs of such agencies and the earthquake insurance program under this subtitle are mutually consistent.

"SEC. 210. APPEAL TO DISTRICT COURT.

"Any community aggrieved by any final determination of the Director under section 202 or any denial or expulsion under section 205(b) may, after exhausting administrative remedies, appeal such determination to the United States district court for the district within which the community is located, not more than 60 days after receipt of notice of such determination. The scope of review by the court shall be as provided under chapter 7 of title 5, United States Code. During the pendency of any such litigation, all determinations of the Director shall be effective and final for the purposes of this title unless stayed by the court for good cause shown.

"SEC. 211. REPORT TO THE PRESIDENT.

"The Director shall include a report regarding the operations under this subtitle in the annual report to the Presi-

dent for submission to the Congress required under section 102 of this Act.

"SEC. 212. REGULATIONS.

"(a) DIRECTOR.—The Director may issue any regulations necessary to carry out this title.

"(b) FEDERAL AGENCIES.—The head of each Federal agency that administers a program of financial assistance relating to the acquisition, construction, reconstruction, repair, or improvement of publicly or privately owned land or facilities, and each Federal instrumentality responsible for the supervision, approval, regulation, or insuring of banks, savings and loan associations, or similar institutions, shall, in cooperation with the Director, issue appropriate regulations to implement the responsibilities of such agency under this title.

"Subtitle B—National Earthquake Insurance Program

"SEC. 221. BASIC AUTHORITY.

"(a) ESTABLISHMENT.—To carry out the purposes of this title, the Director may establish and carry out a national earthquake insurance program to provide insurance against loss resulting from physical damage to or loss of real property or personal property related thereto, in the United States, arising from any earthquake.

"(b) CONDITION FOR OPERATION OF INSURANCE PROGRAM.—No insurance may be made available under this sub-

title unless the Director obtains the financial participation in the insurance program of private insurers representing not less than 80 percent of the net written premiums for homeowners' multiple peril insurance written in the United States for the most recent calendar year ending before the date of the enactment of this title. If such participation falls below 80 percent in any 2 consecutive calendar years, no new or renewal insurance may be written under this subtitle until the Director obtains such 80 percent participation.

"(c) EXTENT OF PRIVATE INSURER FINANCIAL PARTICIPATION.—Private insurers participating in the insurance program shall reimburse the Director for 15 percent of all costs, including insurance-related administrative expenses and any claim loss adjustment costs incurred by the Director, that exceed the amounts in the Insurance Fund established under section 226. The share of such reimbursement paid by each private insurer shall be based on the pro rata share of each private insurer of the total net written premiums for homeowners' multiple peril insurance written by all private insurers participating in the insurance program in all States in which losses due to earthquakes have been incurred during the preceding 5 calendar years.

"(d) IMPLEMENTATION.—In carrying out the insurance program, and in addition to the financial participation by private insurers described in subsection (c), the Director may

arrange for participation, on other than a risk-sharing basis, by private insurers, insurance agents and brokers, insurance adjustment organizations, and other persons.

"SEC. 222. SCOPE OF PROGRAM.

"(a) PRIORITIES.—In carrying out the insurance program, the Director shall give priority to making earthquake insurance available to cover residential properties that are designed for the occupancy of 1 to 4 families, church properties, and small business properties that are owned or leased and operated by small business concerns (as the term is defined by the Director).

"(b) ADDITIONAL TYPES OF INSURANCE.—If on the basis of studies and investigations undertaken and carried out and information received or exchanged under section 224, and such other information as may be necessary, the Director determines that it would be feasible to extend the insurance program to cover other properties, the Director may recommend to Congress that earthquake insurance under this subtitle be made available to cover any types and classes of—

"(1) other residential properties;

"(2) other business properties;

"(3) agricultural properties;

"(4) properties occupied by private nonprofit organizations; and

"(5) properties owned by State and local governments and agencies thereof.

"SEC. 223. TERMS AND LIMITATIONS OF INSURANCE COVERAGE.

"(a) TERMS.—The Director shall, from time to time, after consultation with the advisory committee established under section 203, provide, by regulation, for general terms and conditions of insurability for properties eligible for earthquake insurance coverage under section 222. Such regulations may include—

"(1) the type and locational classification of such eligible properties;

"(2) the nature of damage that may be covered by such insurance;

"(3) limitations on and denial of coverage of any properties;

"(4) appropriate minimum premiums;

"(5) appropriate loss-deductibles including variable deductibles based on the existence of loss-reducing measures that affect the risk of loss; and

"(6) any other terms and conditions relating to such insurance coverage that may be necessary to carry out the purposes of this subtitle.

"(b) DENIAL OF INSURANCE.—In addition to prohibiting insurance of properties in violation of State and local re-

quirements under section 206, and other grounds of uninsurability that the Director may establish, no seismically hazardous structure may be eligible for insurance under this subtitle.

"(c) BASIC LIMITS ON COVERAGE.—In addition to any other terms and conditions under subsection (a), and subject to the additional limits under subsection (d), the Director shall provide that basic insurance coverage under this subsection shall not exceed—

"(1) in the case of residential properties—

"(A) $50,000 aggregate limit for any single-family dwelling, and $150,000 for any residential structure containing more than 1 dwelling unit;

"(B) $10,000 aggregate limit per dwelling unit for any contents related to such unit; and

"(C) in the States of Alaska and Hawaii, and in the Virgin Islands and Guam, $75,000 aggregate limit for dwelling and contents for any single-family dwelling, and $200,000 for any residential structure containing more than 1 dwelling unit;

"(2) in the case of small business properties, an aggregate limit with respect to any single structure, including any contents thereof, that shall be equal to (A) $125,000 plus (B) $125,000 multiplied by the number of such occupants and which shall be allocated among

such occupants (or among the occupant or occupants and the owner) under regulations prescribed by the Director; except that the aggregate limit for the structure itself may in no case exceed $125,000;

"(3) in the case of church properties—

"(A) $125,000 aggregate limit for any single structure; and

"(B) $125,000 aggregate limit per unit for any contents related to such unit.

"(d) ADDITIONAL LIMITS.—The Director may provide that additional limits of earthquake insurance coverage may be made available in excess of any of the basic limits under subsection (c), but such additional limits shall be provided only at premium rates that are not less than the actuarial rates under section 224, and the amount of such additional coverage shall not exceed 250 percent of the amount of the basic limits.

"SEC. 224. ESTIMATED ACTUARIAL PREMIUM RATES.

"(a) STUDIES AND ESTABLISHMENT OF RATES.—The Director may undertake and carry out such studies and investigations and receive and exchange such information as may be necessary to establish, and shall from time to time establish and prescribe, by regulation, on a territorial, subdivision, structure, or other appropriate basis, the estimated actuarial premium rates for types and classes of property eligible for

earthquake insurance and the terms and conditions under which such rates apply.

"(b) ARRANGEMENTS FOR SERVICES.—In carrying out such studies, the Director shall consult with the advisory committee established under section 203 and may enter into contracts, agreements, or other arrangements to utilize the services of the earthquake hazards reduction program agencies, other Federal, State, and local governmental agencies and other persons.

"(c) CONSIDERATIONS.—The Director shall establish actuarial rates under this section based on—

"(1) consideration of the risks involved, including differences in risks due to exposure to degrees of earthquake hazard, including involvement of active faults, susceptibility to landslide, site amplification, and liquefaction, type of structure, the presence or absence of loss reduction measures, and the earthquake survivability of emergency services and lifelines; and

"(2) application of accepted actuarial and ratemaking principles that reflect the risks involved, anticipated insurance related administrative and operating costs and loss and claims payments, and provide for adequate reserves.

"SEC. 225. CHARGEABLE PREMIUM RATES.

"(a) ESTABLISHMENT.—On the basis of estimates made under section 224 and such other information as may be necessary, the Director shall, from time to time, and after consultation with the advisory committee established under section 203, establish and prescribe, by regulation—

"(1) chargeable premium rates for any types and classes of properties eligible for earthquake insurance, which chargeable rates may be less than the actuarial rates under section 224; and

"(2) the terms and conditions under which such rates shall apply.

"(b) CONSIDERATIONS.—In establishing chargeable rates that are less than actuarial rates, the Director shall consider the objective of making earthquake insurance on existing property available at reasonable cost so as to encourage States and communities to adopt loss reduction measures that conform with the criteria under section 204 and participate in the insurance program, and to encourage prospective insureds to purchase such insurance.

"(c) NEW CONSTRUCTION.—Notwithstanding any other provision of this title, after the identification of any earthquake-prone area becomes final under section 202(c), the chargeable rate with respect to any property shall not be less than the actuarial rate established under section 224 if the construction or substantial improvement of such property is

begun after the tentative identification under section 201 of the earthquake-prone area in which the property is located.

"(d) NEWLY ELIGIBLE CONSTRUCTION.—Property that is ineligible for insurance under this title because of uninsurability under section 223 or violation of State or local law under section 206, and for which such ineligibility has been remedied, shall be eligible for chargeable rates under this section, except in cases in which the remedy is accomplished or accompanied by substantial improvement.

"SEC. 226. NATIONAL EARTHQUAKE INSURANCE FUND.

"(a) ESTABLISHMENT.—To carry out the insurance program under this subtitle, the Director shall establish in the Treasury of the United States a National Earthquake Insurance Fund.

"(b) CREDITS AND USE OF FUND.—Insurance premiums received by the Director under the insurance program, any amounts borrowed under section 227, and any amounts appropriated under section 228 shall be credited to the Insurance Fund, which shall be available to the Director to pay any losses and expenses under the insurance program.

"(c) INVESTMENT OF AMOUNTS.—The Director may request the Secretary of the Treasury to invest any amounts in the Insurance Fund in obligations issued or guaranteed by the United States, as the Director considers appropriate.

"SEC. 227. BORROWING FROM TREASURY.

"To the extent that the accumulated assets, including any return on investments, in the Insurance Fund are insufficient to pay claims and expenses, the Director may issue, from time to time, to the Secretary of the Treasury, notes and other obligations. The amount of such obligations outstanding at any one time shall not exceed $25,000,000,000 (or such greater amount as may be approved by the President). Such obligations shall bear interest at a rate determined by the Secretary of the Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States of comparable maturities. Any amounts borrowed by the Director under this section shall be deposited in the Insurance Fund.

"SEC. 228. AUTHORIZATION OF APPROPRIATIONS.

"(a) PURPOSE.—There are authorized to be appropriated such sums as may from time to time be necessary to carry out this subtitle, including sums—

"(1) to cover administrative expenses;

"(2) to reimburse the Insurance Fund for claims and expenses paid; and

"(3) to make such other payments as may be necessary to carry out this subtitle.

"(b) AVAILABILITY.—All such sums appropriated under this section shall be available without fiscal year limitation.

"Subtitle C—National Earthquake Excess Loss Reinsurance Program

"SEC. 241. BASIC AUTHORITY.

"(a) ESTABLISHMENT.—Upon establishment of the insurance program under subtitle B, the Director shall also establish a national earthquake excess loss reinsurance program, which shall be available only to private insurers that are participating in the insurance program under subtitle B. For the purposes of this subtitle, any affiliated private insurers shall be considered a single private insurer.

"(b) TERMINATION OF REINSURANCE PROGRAM.—If, pursuant to section 221(b), new and renewal insurance is at any time not being written, new or renewal reinsurance may not be written under this subtitle until the conditions under section 221(b) for writing of insurance under subtitle B are fulfilled.

"(c) COVERAGE.—

"(1) IN GENERAL.—Reinsurance coverage under this subtitle may be made available to cover not more than 90 percent of the losses of each private insurer resulting from an earthquake that are in excess of 10 percent of the private insurer's countrywide subject net written premium after the insurance industry has sustained losses in the covered lines set forth in section 242 that exceed 10 percent of the industry country-

wide subject net written premium, as determined by the Director, in consultation with the advisory committee under section 203.

"(2) INDUSTRY COUNTRYWIDE SUBJECT NET WRITTEN PREMIUM.—For purposes of this subtitle, the term 'industry countrywide subject net written premium' means any direct and reinsurance premiums received by private insurers and reinsurers, less premiums paid for ceded reinsurance for all lines of reinsurance under section 242, in the most recent completed calendar year.

"(d) LOSSES.—For purposes of calculating losses of any private insurer, the Director, in consultation with the advisory committee established under section 203, shall take into account any collectible reinsurance (not provided under the reinsurance program under this subtitle) and may establish procedures that take into account—

"(1) earthquake losses occurring within the 12-month period beginning 180 days before the date of the event for which payment under reinsurance coverage under this subtitle is made; and

"(2) any uncollectible reinsurance (not provided under the reinsurance program under this subtitle).

"SEC. 242. COVERED LINES OF INSURANCE.

"Reinsurance shall be provided for the following lines of insurance, as contained in the National Association of Insurance Commissioners Fire and Casualty Annual Statement—

"(1) fire;

"(2) allied lines;

"(3) farmowners multiple peril;

"(4) homeowners multiple peril;

"(5) commercial multiple peril;

"(6) ocean marine;

"(7) inland marine;

"(8) earthquake;

"(9) workers compensation;

"(10) other liability;

"(11) aircraft (all perils);

"(12) glass;

"(13) burglary and theft;

"(14) boiler and machinery; and

"(15) reinsurance.

"SEC. 243. PURCHASE REQUIREMENT.

"Any private insurer that purchases reinsurance coverage under this subtitle shall purchase such coverage for all of the lines of insurance under section 242.

"SEC. 244. PREMIUM RATES.

"The Director shall establish premium rates based on consideration of the factors under section 224(c).

"SEC. 245. DENIAL OF REINSURANCE COVERAGE.

"Notwithstanding the issuance of insurance coverage by a primary insurer, the Director shall incur no reinsurance liability and shall not honor any claim on account of losses to any insured property or on any loss that occurred on or is caused by a property in violation of any State or local law, regulation, or ordinance described in section 206, or that is seismically hazardous or otherwise uninsurable at the time that it is insured by the private insurer.

"SEC. 246. NATIONAL EARTHQUAKE REINSURANCE FUND.

"(a) ESTABLISHMENT.—To carry out the reinsurance program under this subtitle, the Director shall establish in the Treasury of the United States a National Earthquake Reinsurance Fund.

"(b) USE OF FUND.—Reinsurance premiums received by the Director under the reinsurance program, and any amounts borrowed under section 247, and any amounts appropriated under section 248, shall be credited to the Reinsurance Fund, which shall be available to the Director to pay any losses and expenses under the reinsurance program.

"(c) INVESTMENT OF AMOUNTS.—The Director may request the Secretary of the Treasury to invest any amounts in the Reinsurance Fund in obligations issued or guaranteed by the United States, as the Director considers appropriate.

"SEC. 247. BORROWING FROM TREASURY.

"To the extent that the accumulated assets, including investment return, in the Reinsurance Fund are insufficient to pay claims and expenses, the Director may issue, from time to time, to the Secretary of the Treasury, notes and other obligations. The amount of such obligations outstanding at any one time shall not exceed $25,000,000,000 (or such greater amount as may be approved by the President). Such obligations shall bear interest at a rate determined by the Secretary of the Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States of comparable maturities. Any amounts borrowed by the Director under this section shall be deposited in the Reinsurance Fund.

"SEC. 248. AUTHORIZATION OF APPROPRIATIONS.

"(a) PURPOSE.—There are authorized to be appropriated such sums as may from time to time be necessary to carry out this subtitle, including sums—

"(1) to cover administrative expenses;

"(2) to reimburse the Reinsurance Fund for claims and expenses paid; and

"(3) to make such other payments as may be necessary to carry out this subtitle.

"(b) AVAILABILITY.—Any sums appropriated under this section shall be available without fiscal year limitations.".

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101ST CONGRESS
2D SESSION

H. R. 4480

To facilitate the provision of homeowners insurance against the risk of catastrophic earthquakes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 4, 1990

Mr. SWIFT (for himself, Mr. DREIER of California, Mr. MOAKLEY, Mr. BRUCE, Mr. TANNER, Mr. MCCLOSKEY, Mr. BILBRAY, Mr. LEWIS of California, and Mr. CAMPBELL of California) introduced the following bill; which was referred to the Committee on Banking, Finance and Urban Affairs

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A BILL

To facilitate the provision of homeowners insurance against the risk of catastrophic earthquakes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act shall be cited as the "Federal Earthquake Insurance and Reinsurance Act".

SEC. 2. FINDINGS.

The Congress finds that:

(1) Natural mass disasters such as earthquakes and volcanic eruptions have created in the past and

will likely create in the future great personal suffering and financial hardship for a substantial portion of the Nation's population.

(2) Such disasters are largely unpredictable and unpreventable.

(3) The catastrophic and unpredictable nature of these disasters prevent individual, private insurers from offering the necessary insurance against these perils without the participation of the Federal Government.

(4) In the absence of an adequate system for insuring against such losses, the Federal and State governments will bear excessive and avoidable costs of disaster relief and the Nation's commerce and economy would be seriously destabilized.

(5) The existing systems of private insurance, reinsurance, and government disaster relief are currently inadequate and need to be replaced by a single, comprehensive plan.

(6) As a matter of national policy, a reasonable method of providing insurance against such losses is to create a Federal Earthquake Insurance and Reinsurance Corporation, which will assist in making insurance against such disasters widely available and affordable to the general public.

SEC. 3. PURPOSE OF ACT.

It is the purpose of this Act to create a Federal Earthquake Insurance and Reinsurance Corporation which shall—

(1) provide coverage in residential property insurance policies against the risks of earthquake and volcanic eruption with private insurer participation; and

(2) facilitate the offering by private insurers and private reinsurers of larger amounts of property and casualty insurance coverage against the risks of earthquake, volcanic eruption, and other losses associated with earthquake or volcanic eruption by making available excess reinsurance.

SEC. 4. CREATION OF FEDERAL EARTHQUAKE INSURANCE AND REINSURANCE CORPORATION AND AUTHORIZATION TO ESTABLISH AND CARRY OUT PROGRAM.

(a) CORPORATION.—There is created the Federal Earthquake Insurance and Reinsurance Corporation (hereinafter in this Act referred to as the "Corporation") the functions of which, as the insuring entity, are to (1) make available earthquake and volcanic eruption insurance coverage for residential property, and (2) make available property and casualty excess reinsurance coverage for private insurers and private reinsurers for losses resulting from earthquake, volcanic eruption, and other losses associated with earthquake or volcanic eruption.

(b) BOARD AUTHORITY.—The Board of the Corporation is authorized—

(1) to establish and manage, pursuant to the provisions of section 11, a Residential Property Insurance Fund, consisting of moneys collected pursuant to section 9;

(2) to issue excess reinsurance contracts and collect premiums pursuant to section 10;

(3) to establish and manage a Reinsurance Fund, pursuant to the provisions of section 11;

(4) to borrow from the United States Treasury pursuant to the provisions of section 12 and to use and distribute its funds in accordance with this Act;

(5) to work in conjunction with the Federal Emergency Management Agency pursuant to section 13; and

(6) to take any and all other actions which may be reasonably necessary and appropriate to carry out this Act.

SEC. 5. POWERS OF THE CORPORATION.

(a) IN GENERAL.—The Corporation shall have the power to take any and all actions which may be reasonably necessary and appropriate to carry out this Act, including the making of contracts, the employment and compensation of persons, and the acquisition of real and personal property.

(b) SUITS.—All lawsuits by or against the Corporation shall be brought in the district court of the United States with jurisdiction over the action, except that any action by an insurer or reinsurer against the Corporation shall be brought in the United States District Court for the District of Columbia.

SEC. 6. TAX STATUS OF THE CORPORATION.

The Corporation, its Residential Property Insurance Fund, its Reinsurance Fund, its franchise, activities, capital, reserves, surplus, and income shall be exempt from all taxation now or hereafter imposed by the United States, by any territory, dependency, or possession thereof, or by any State, county municipality, or local taxing authority, except that—

(1) any real property owned in fee by the Corporation shall be subject to State, territorial, county, municipal, or other local taxation to the same extent, according to its value, as other similarly situated and used real property, without discrimination in the valuation, classification, or assessment thereof;

(2) the Corporation and its employees shall be subject to any nondiscriminatory payroll and employment taxes intended to finance benefits based on employment, such as social security and unemployment benefits, to the same extent as any privately owned corporation; and

(3) the policies issued by or in conjunction with the Corporation shall be subject, where applicable, to State insurance premium taxes.

SEC. 7. BOARD OF DIRECTORS.

(a) NUMBER OF MEMBERS.—The Corporation shall be managed by a Board of Directors consisting of eleven members, one of whom shall be the Chairman of the Board. The Chairman shall be the same individual as the Director of the Federal Emergency Management Agency.

(b) SELECTION OF BOARD OF DIRECTORS.—All members of the Board will be appointed by the President of the United States. Of these, four shall be representatives of private insurers or private reinsurers, one shall be a State insurance regulator, and six shall be Federal Government officials, one of whom shall be the Chairman of the Board. All appointments to the Board shall be personal appointments and no other person may be substituted for the individual appointed by the President.

(c) TERM OF OFFICE.—Each member shall hold office for a term of six years. Vacancies arising during a term of office shall be filled by Presidential appointment. Initial terms of office shall be staggered as set forth in the plan of operation under section 8.

(d) RESPONSIBILITIES OF THE BOARD.—The Board shall be responsible for all activities designated in this Act

and for all other measures which may be reasonably necessary and appropriate to carry out this Act. All decisions of the Board shall be consistent with standard insurance practices and generally accepted accounting and underwriting principles.

(e) VOTING PROCEDURE.—

(1) Each member of the Board, except the Chairman, shall be entitled to one vote. The Chairman may vote only in the event that a vote of the Board results in a tie. Decisions of the Board shall require approval by a majority of the members of the Board.

(2)(A) All decisions of the Board shall be submitted to the Chairman for approval. Subject to subparagraphs (B) and (C), no decision shall become effective until it is approved by the Chairman.

(B) Should the Chairman fail to approve a decision of the Board within sixty days the decision shall be deemed approved.

(C) In the event that the Chairman disapproves a Board decision, the Board may reconsider that decision. If upon reconsideration, a two-thirds majority of the Board members vote to override the Chairman's veto, the decision shall become effective without the approval of the Chairman.

(f) CHAIRMAN OF THE BOARD AND EXECUTIVE DIRECTOR OF THE CORPORATION.—

(1) The Chairman of the Corporation shall—

(A) review and in writing either approve or veto the decisions of the Board pursuant to the provisions of subsection (e);

(B) provide the Board with a written statement setting forth reasons for vetoing any of its decisions; and

(C) prepare the budget for the Corporation.

The Chairman may delegate the authority to prepare the budget to the Executive Director or to employees of the Corporation, but the Chairman must review and approve any budget prepared by others.

(2)(A) The Executive Director of the Corporation shall administer the affairs of the Corporation and perform such duties as this Act, the plan of operation under section 8, and the Board shall require.

(B) The Executive Director shall be appointed by the President, by and with the advice and consent of the Senate. In the appointment of the Executive Director due consideration shall be given to the recommendation of the Board.

SEC. 8. PLAN OF OPERATION.

(a) PURPOSE AND PROVISIONS OF THE PLAN OF OPERATION.—

(1) A plan of operation shall be developed by the Board pursuant to subsection (b) in order to ensure the fair, reasonable, and equitable administration of the Corporation and its accumulated funds.

(2) The plan of operation shall include all guidelines, criteria, definitions, clarifications, and procedures necessary to carry out this Act.

(b) ESTABLISHMENT OF A PLAN OF OPERATION.—

(1) The members of the Board, except the Chairman, shall submit a plan of operation approved by a majority of the Board to the Chairman for approval no later than ninety days following the organizational meeting of the Board.

(2) The Chairman shall approve or disapprove the plan of operation within sixty days of receipt. The plan of operation shall become effective upon the Chairman's written approval. If the Chairman disapproves a proposed plan of operation, the Chairman shall provide a written rationale for disapproval. If the Chairman fails to act on a plan of operation within sixty days of receipt, it shall be deemed approved.

(3)(A) If the Chairman disapproves a proposed plan of operation, the Board may reconsider the plan of

operation. If upon reconsideration a two-thirds majority of the Board members vote to override the Chairman's veto, the plan of operation shall become effective without the approval of the Chairman.

(B) If the Board fails to override the Chairman's veto, the Board shall prepare a revised plan of operation within ninety days of the veto and submit such plan of operation for the Chairman's approval.

(c) AMENDMENTS TO THE PLAN OF OPERATION.—The Board may at any time amend the plan of operation by following the procedures outlined in subsection (b) for the original submission of the plan.

SEC. 9. PRIMARY INSURANCE PROGRAM.

(a) EARTHQUAKE AND VOLCANIC ERUPTION INSURANCE COVERAGE.—

(1) The Corporation shall make available earthquake and volcanic eruption coverage for residential property. The Board shall establish deductible amounts and limits for the earthquake and volcanic eruption coverage.

(2) Any private insurer issuing residential property insurance coverage in States with an exposure to the earthquake and volcanic eruption perils may provide the coverage, on behalf of the Corporation, to their residential property policyholders. All private in-

surers electing to participate in the Primary Program shall provide the coverage to all of their residential property policyholders and all private insurers electing to purchase the excess reinsurance coverage pursuant to section 10 shall provide the coverage, on behalf of the Corporation, or its equivalent, on their own behalf, to all of their residential property policyholders.

(3) States with an exposure to the earthquake and volcanic eruption perils will be determined by the Board in consultation with the relevant Federal agencies.

(4) After the effective date of this Act, in order to obtain or retain a loan secured by residential property located in States with exposure to earthquake or volcanic eruption and (A) provided, backed, insured, or reinsured by the Government of the United States under the Federal Housing Administration or any other federally funded program, or (B) issued by any federally insured institution, including the insureds of the Federal Deposit Insurance Corporation or the Federal Savings and Loan Insurance Corporation (or its successors), the mortgagor shall be required by the program or federally insured institution to purchase the earthquake and volcanic eruption insurance coverage available pursuant to subsection (a)(1) or the equivalent in-

surance from a private insurer. The purchase of the coverage must be made either at the time the loan secured by residential property is obtained or at the annual renewal of existing residential property insurance coverage. The Board shall determine, in cooperation with the appropriate Federal agencies, the methods by which purchasers shall be required to present proof that they have obtained a policy consistent with the provisions of this Act.

(b) RATING.—The Board shall establish and adjust the rates for the earthquake and volcanic eruption insurance coverage pursuant to the procedures set forth in the plan of operation. Due consideration shall be given to the frequency and severity of the occurrence of earthquake and volcanic eruption, all expenses resulting therefrom, and any other relevant factors as shall be necesssary to carry out the purposes of this Act.

(c) PAYMENTS.—

(1) Private insurers issuing earthquake and volcanic eruption insurance coverage shall remit the premiums collected, less the insurers' expense allowances as provided for in the plan of operation, on a quarterly basis to the Corporation according to the procedures prescribed in the plan of operation.

(2) Premiums remitted to the Corporation shall be deposited in the Residential Property Insurance Fund which shall be managed by the Corporation pursuant to section 11.

(d) REIMBURSEMENT.—

(1) The Corporation shall reimburse private insurers providing earthquake and volcanic eruption insurance coverage pursuant to this section from the Residential Property Insurance Fund. Reimbursement for all claim payments up to and including the policy limits of coverage and for all loss adjustment expenses paid as a result of earthquake or volcanic eruption shall be made as follows:

(A) The Corporation shall reimburse insurers for all claim payments and loss adjustment expense payments made pursuant to the Corporation's obligations. If the gross reimbursements exceed the moneys in the Fund, a combination of industry participation and borrowed funds from the Treasury of the United States pursuant to section 12 shall cover the additional losses. Moneys paid out for additional losses shall be recouped in future rates for earthquake and volcanic eruption coverage pursuant to the plan of operation.

(B) The industry participation will be equivalent to 10 percent of the additional losses. Private insurers issuing earthquake and volcanic eruption coverage shall be assessed for the industry participation in the additional losses based upon the proportion that each insurer's written premiums for residential property insurance coverage in each seismic rating zone in which the event occurred bear to the total written premiums for this coverage in each seismic rating zone in which the event occurred, based upon the most recently filed National Association of Insurance Commissioners Annual Statement. These assessments may be reinsured through the excess reinsurance program described in section 10. To the extent that recoupment is obtained by private insurers pursuant to subsection (A) for losses also covered under the Excess Reinsurance Program, the insurer shall reimburse the Corporation accordingly.

(2) The Board is authorized to prescribe, subject to the Chairman's approval, regulations establishing the general method or methods by which proved and approved claims for losses may be adjusted and paid for damages covered by the earthquake and volcanic insurance coverage issued pursuant to this section. The

claim practices of the Corporation shall be subject to and conform with applicable State insurance unfair trade practices statutes. Judicial review of a decision of the Corporation regarding reimbursement of a private insurer shall be available pursuant to section 5(b).

(e) OBLIGATIONS.—All earthquake and volcanic eruption insurance coverage provided through this Corporation shall constitute obligations, in accordance with the provisions of this Act, of the United States of America, and the full faith and credit of the United States of America is pledged for the full payment and performance of such obligations, subject to the provisions of subsection (d)(1). The private insurers participating in this program shall bear no risk and shall assume no liability for the earthquake and volcanic eruption coverage provided through the Corporation except as provided in subsection (d)(1).

SEC. 10. REINSURANCE PROGRAM.

(a) REINSURANCE OFFERED BY THE CORPORATION.—

(1) The Corporation shall offer to any private insurer or private reinsurer excess reinsurance coverage for direct and indirect losses that are not eligible for insurance coverage pursuant to section 9 and arise from an earthquake or volcanic eruption as follows:

(A) The Corporation shall be liable with respect to such reinsurance in the event of an earth-

quake or volcanic eruption after, as determined by the Board, the insurance industry has incurred losses from that single event that are covered under the lines set forth in subsection (b)(1) and that exceed 8 percent of the industry countrywide subject net written premium.

(B) After the insurance industry has sustained losses described in subparagraph (A), the Corporation shall be liable to an individual private insurer or private reinsurer for 95 percent of qualifying losses in excess of 8 percent of the private insurer's or private reinsurer's countrywide subject net written premium.

Those private insurers or reinsurers participating in the primary insurance program pursuant to section 9 shall purchase the excess reinsurance coverage.

(2) For purposes of paragraph (1), the term "qualifying losses" means losses incurred by a private insurer or private reinsurer from an earthquake or volcanic eruption (including losses occurring twelve months before or after the event described in paragraph (1)(A) and exceeding 2 percent of the private insurer's or private reinsurer's countrywide subject net written premium) reduced (A) by any collectible reinsurance recoverable, and (B) by a factor for uncollecti-

ble reinsurance recoverable as determined in accordance with the following schedule:

If the percentage of unrecoverable reinsurance arising from the event to total reinsurance (other than earthquake excess catastrophe reinsurance purchased from the Corporation) with respect to the event is:

Over	But not over	
0 percent	5 percent	0 percent of unrecoverable reinsurance.
5 percent	15 percent	33⅓ percent of unrecoverable reinsurance over 5 percent but not over 15 percent.
15 percent	25 percent	Amount determined on line 2 plus 66⅔ percent of unrecoverable reinsurance over 15 percent but not over 25 percent.
25 percent	* * *	Amount determined on line 3 plus 100 percent of unrecoverable reinsurance over 25 percent.

(b) LINES OF INSURANCE.—

(1) The Corporation shall provide reinsurance coverage to private insurers for all of the following lines of insurance appearing in the National Association of Insurance Commissioners Fire and Casualty Annual Statement filed with the applicable State department of insurance:

(A) Fire.

(B) Allied lines.

(C) Farmowners multiple peril.

(D) Homeowners multiple peril.

(E) Commercial multiple peril.

(F) Ocean marine.

(G) Inland marine.

(H) Earthquake.

(I) Workers compensation.

(J) Other liability.

(K) Aircraft (all perils).

(L) Glass.

(M) Burglary and theft.

(N) Boiler and machinery.

(O) Reinsurance.

Reinsurance coverage must be purchased for all covered lines of insurance and in all affected seismic rating zones with the rates for such coverage set by the Corporation, pursuant to subsection (c).

(2) The Corporation shall provide reinsurance coverage to private reinsurers for all of the lines of insurance mentioned in paragraph (1) as well as other lines of insurance appearing in the National Association of Insurance Commissioners Fire and Casualty Annual Statement, as determined by the Board in the plan of operation.

(c) RATES.—

(1) Rates for reinsurance coverage shall be established and adjusted by the Board. Due consideration shall be given to the frequency and severity of the occurrence of earthquake and volcanic eruption, all expenses resulting therefrom, and any other relevant factors as shall be necessary to carry out this Act.

(2) Premiums paid to the Corporation for such reinsurance coverage shall be accumulated in the Reinsurance Fund, to be managed pursuant to section 11.

(d) REINSURANCE CONTRACTS.—

(1) The contracts issued by the Corporation shall contain terms and conditions similar to those generally used in private catastrophic reinsurance contracts.

(2) Judicial review of a decision of the Corporation regarding payment of claim shall be made available pursuant to section 5(b).

(3) All reinsurance contracts issued by the Corporation shall constitute obligations, in accordance with the terms of such reinsurance, of the United States of America, and the full faith and credit of the United States of America is pledged for the full payment and performance of such obligations.

(4) All private insurance and reinsurance companies affiliated with and under the same ownership shall

be considered a single entity for purposes of this section.

SEC. 11. MANAGEMENT OF FUNDS.

(a) INVESTMENT.—The Board shall invest the assets of the Residential Property Insurance Fund and the Reinsurance Fund only in United States Treasury obligations and shall not set aside, invest, utilize, or allocate these funds for any purposes other than those permitted under this Act.

(b) USE OF RESIDENTIAL PROPERTY INSURANCE FUND.—The Residential Property Insurance Fund may be used to—

(1) reimburse private insurers as required in section 9 on residential property policies, and

(2) pay all necessary operating expenses arising out of the creation and operation of the Corporation.

(c) USE OF REINSURANCE FUND.—The Reinsurance Fund may be used to—

(1) pay claims submitted by private insurers and reinsurers on reinsurance coverage issued by the Corporation as required in section 10, and

(2) pay all necessary operating expenses arising out of the creation and operation of the Corporation.

SEC. 12. BORROWING FROM TREASURY.

(a) IN GENERAL.—To the extent (1) that the accumulated assets in the Residential Property Insurance Fund are

insufficient to reimburse private insurers pursuant to the provisions of this Act or to maintain the balance of the Residential Property Insurance Fund at a level sufficient to pay its accrued liabilities, or (2) that the accumulated assets in the Reinsurance Fund are insufficient to pay claims on reinsurance policies issued by the Corporation or to maintain the balance of the Reinsurance Fund at a level sufficient to pay its accrued liabilities, the Corporation shall borrow such amount as is necessary from the United States Treasury, except that the outstanding balance of funds borrowed from the Treasury shall not at any time exceed such sums as the Congress may appropriate acting upon the recommendation of the Board of the Corporation.

(b) NOTES AND OTHER OBLIGATIONS.—The Corporation is authorized to issue, and the Secretary of the Treasury is authorized and directed to purchase, such notes or other obligations necessary to enable the Corporation to borrow funds from the Treasury in accordance with this Act. Such notes or other obligations issued by the Corporation in borrowing under this subsection shall be subject to such terms and conditions as may be fixed by the Corporation and the Secretary of the Treasury, except that the Secretary of the Treasury shall liberally grant extensions in repayment schedules that the Board advises the Secretary are necessary. The Secretary of the Treasury and the Corporation shall take into

consideration the average market yield on outstanding marketable obligations of the United States of comparable maturities during the month preceding the issuance of such notes or other obligations in setting the interest rates on such notes and obligations.

(c) PUBLIC DEBT TRANSACTION.—For the purpose of purchasing such notes and obligations, the Secretary of the Treasury is authorized to use as a public debt transaction the proceeds of the sale of any securities issued under chapter 31 of title 31, the United States Code, and the purposes for which securities may be issued under that chapter are extended to include any purchase of such notes or obligations. The Secretary of the Treasury may at any time sell any of the notes or other obligations as acquired by him or her under this subsection. All redemptions, purchases, and sales by the Secretary of the Treasury of such notes or other obligations shall be treated as public debt transactions of the United States.

SEC. 13. EARTHQUAKE LOSS MITIGATION PROGRAM.

(a) DEVELOPMENT OF MITIGATION PLAN.—The Corporation, working in close cooperation with the Federal Emergency Management Agency and representatives of State and local government entities as well as other affected private industry groups and in coordination with the National Earthquake Hazards Reduction Program, shall develop a

practical, cost-effective, and workable plan of earthquake loss mitigation. At a minimum, the following mitigation concepts applicable to residential and commerical dwellings (unless otherwise noted) shall be considered for inclusion in the plan:

(1) national seismic standards for new private construction;

(2) community-based building codes;

(3) proper institutional support and staffing to ensure compliance with building codes;

(4) earthquake strengthening of old structures in high-risk seismic areas;

(5) adequate licensing of design professionals;

(6) expanded research and development of new cost-effective building technologies and retrofitting;

(7) educational/promotional campaigns to encourage voluntary mitigation;

(8) reward-based fiscal incentives such as lower property tax assessments to encourage use of state-of-the-art mitigation technology; and

(9) mandatory, presale earthquake inspections of residential property.

(b) IMPLEMENTATION OF MITIGATION PLAN.—Within eighteen months of enactment of this Act, the Corporation shall submit the completed mitigation plan to the Congress, relevant national and regional seismic preparedness organiza-

tions, and relevant State, county, and municipal governments. These Federal, State, and local governing bodies shall be encouraged to adopt the mitigation plan as appropriate.

(c) INSURANCE MITIGATION INCENTIVES.—The Corporation shall study the following insurance-related incentives:

(1) lower deductible amounts for residential property which meets the recognized community-based seismic building standards;

(2) a requirement in the insurance policy that residential property substantially destroyed by an earthquake, if rebuilt, must be rebuilt to state-of-the-art seismic strength standards;

(3) lower premiums and/or deductible amounts if the residential property passes an earthquake inspection required as a condition of sale and paid for by the seller; and

(4) the assessment of a nominal surcharge on earthquake insurance premiums for residential properties covered by the Primary Insurance Program with the revenues to be allocated to loss mitigation programs.

Any of these concepts determined to be workable and cost-effective ways to encourage earthquake loss mitigation shall

be implemented in the plan of operation and applied to the Primary Insurance Program pursuant to section 9.

SEC. 14. EFFECTIVE DATE.

This Act shall take effect sixty days following the date of its enactment.

SEC. 15. DEFINITIONS.

As used in this Act, unless the context otherwise implies:

(1) The term "additional losses" means claim and loss adjustment expense payments for earthquake and volcanic eruption coverage issued pursuant to section 9 that exceed the accumulated moneys in the Residential Property Insurance Fund.

(2) The term "alien" means an insurer or reinsurer organized and/or incorporated in a country other than the United States.

(3) The term "Board" means the Board of Directors of the Federal Earthquake Insurance and Reinsurance Corporation.

(4) The term "Chairman" means the Chairman of the Board of the Federal Earthquake Insurance and Reinsurance Corporation.

(5) The term "earthquake" means a shaking or trembling of the crust of the Earth caused by under-

ground seismic forces or by breaking and shifting of rock beneath the surface.

(6) The term "earthquake and volcanic eruption coverage" means insurance issued pursuant to section 9 with limits to be determined by the Board for direct damage to residential property proximately caused by an earthquake or volcanic eruption. Ths insurance shall include coverage for debris removal and additional living expenses incurred as a result of direct damage to the premises by earthquake or volcanic eruption but shall not include coverage for any fires associated with an earthquake or a volcanic eruption.

(7) The term "fire associated with earthquake or volcanic eruption" means any fire proximately caused by an earthquake or a volcanic eruption, as those terms are defined in this section.

(8) The terms "insurance industry" and "industry" means all private insurers and private reinsurers.

(9) The term "private insurer' and "private reinsurer" means any insurer or reinsurer which is either licensed or admitted to write property and casualty insurance or reinsurance within a State or is a branch of an alien insurer or reinsurer which is entered through and licensed by a State to conduct insurance or reinsurance business. In the case of an insurance exchange

or group of unincorporated underwriters the term shall mean an underwriting syndicate notwithstanding the licensed or admitted status of the insurance exchange or group of unincorporated underwriters.

(10) The term "reinsurance fund" means the accumulation of the premiums paid to the Corporation by private insurers and private reinsurers purchasing excess reinsurance from it pursuant to section 10.

(11) The term "residential property" means (A) one, two, three, or four family residential structures (including mobile or manufactured homes) and the personal property therein, and (B) the personal property of occupants of residential condominiums, cooperatives, and apartment structures.

(12) The term "residential property insurance coverage" means policies, riders, or endorsements of insurance that provide indemnity, in whole or in part, for the loss, destruction, or damage of residential property.

(13) The term "residential property insurance fund" means the accumulation of the premiums for earthquake and volcanic eruption coverage collected pursuant to section 9.

(14) The term "State" means any State of the United States, District of Columbia, Commonwealth of

Puerto Rico, Virgin Islands, Guam, American Samoa, Commonwealth of Mariana Islands, and any other territory or possession of the United States.

(15) The term "subject net written premium" means direct and reinsurance premiums received by private insurers and private reinsurers, less premiums paid for ceded reinsurance, for all lines of coverage listed in section 10(b).

(16) The term "unrecoverable reinsurance" means reinsurance proceeds due and payable in accordance with the terms of the reinsurance contract which are not paid within twelve months of the due date.

(17) The term "volcanic eruption" means the expulsion, as a result of natural causes, of molten rock, rock fragments, gases, ashes, and other natural substances through an opening in the Earth's crust.

○

THE EARTHQUAKE PROJECT

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Project Director

September 11, 1990

The Honorable Tim Valentine
Chairman, Science, Research and
Technology Subcommittee
2319 Rayburn House Office Building
Washington, D.C. 20515-6305

Dear Chairman Valentine:

Thank you again for the opportunity to testify at your Subcommittee's July 26 hearing on earthquake hazard mitigation and earthquake insurance legislation.

The Earthquake Project believes the hearing was an excellent start in building a record on earthquake mitigation and insurance issues. We felt, however, that the time-constraints of the hearing as well as the distractions of the House floor debate cut short the dialogue. The result was that many important points were confused and left unresolved. After seeking permission from your Subcommittee staff, we felt it would be appropriate to supplement the hearing record in order to clarify some issues and tie up loose ends.

This correspondence, accordingly, addresses seven issues discussed at the hearing that the Earthquake Project believe merit further discussion and clarification. We trust this letter will be included in the published hearing record.

(1) Broadening the legislation to include other natural disasters, such as hurricanes and tornadoes.

You, Mr. Chairman, and Congressman Campbell raised this issue toward the end of the hearing after the insurance panel of witnesses had finished. We believe expanding the scope of the earthquake insurance bills to include other natural hazards merits serious consideration in developing legislation in the next Congress.

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It should be understood, however, that present insurance contracts — homeowners, residential fire, commercial multiple peril, and commercial fire — already cover natural disasters such as hurricanes, tornadoes, and hail storms, and have done so for at least fifty years. There is currently no need for the federal government to include these hazards in an all-hazards policy at the primary level, since there are very few properties that are not covered for these hazards. The insurance industry does not feel that the government should enter in an area that is being handled satisfactorily by the private sector.

There have been some market failures (e.g., coastal area windstorm and California brush fire areas), but these have been remedied at the state level through pooling arrangements. The other substantial natural hazard, the flood risk, is already covered by the National Flood Insurance Program.

Combining the natural risks into a single federal all-hazards policy will probably not lower overall costs or equalize the cost per policyholder over the U.S. The homeowners multiple peril policy is a case in point. All policyholders who have a homeowners policy are already covered by a multitude of coverages — fire, lightning, hail, riot, aircraft, vehicles, smoke, explosion, theft, personal liability, and many others. However, there is no cross-subsidization in the pricing of this product from state to state, nor between territories within states. For example, the pricing of the product in Kansas will recognize the high level of hail and tornadoes in that state; conversely, large urban centers will show a high proportion of the losses coming from theft and liability coverages. Each area's premium reflects the losses from hazards peculiar to that area. In addition, although the hazards covered are generally the same in each area, the total premium varies considerably from place to place, recognizing the total losses from all hazards occurring in each area.

Enactment of H.R. 4480 would be consistent with efforts to achieve an all-hazards policy. The homeowner would simply see another hazard (earthquake) added to his/her already existing multiple hazard policy. The premium for the earthquake hazard under H.R. 4480 would be added to the existing policy. The premium would pass through to the federal corporation and losses would be paid by the corporation through the policyholder's insurance company. From the homeowner's perspective, the standard policy (or residential fire policy) would include earthquake and volcanic eruption coverage that is presently excluded, together with fire and windstorm for example, making the homeowners policy more comprehensive as suggested by you and Mr. Campbell at the hearing.

(2) <u>View of the property-casualty industry on the mitigation issue</u>.

The view was expressed at the hearing that the Earthquake Project may not reflect the majority opinion of the property-casualty insurance

industry on the mitigation issue. There was a suggestion that some insurance companies actually support the mandatory mitigation approach of the H.R. 4915 over the consensual approach of H.R. 4480.

We believe the Earthquake Project does speak for the industry on earthquake hazard mitigation and insurance issues. Over 250 insurance companies/groups and all the major trade associations representing the vast majority of the property-casualty written premium in this country together with national insurance agent organizations and reinsurers are financially supporting the Earthquake Project and efforts to promote H.R. 4480. Member companies have had every opportunity to voice their views on earthquake mitigation and insurance issues before various committees which set policy for the Earthquake Project. Since our governing structure encourages all member companies to express dissent and few companies have been shy about raising any and all matters, we know that member companies and associations are supporting the Project's efforts.

Having said this, however, I need to reaffirm that the Earthquake Project's current preference for mitigation approach of H.R. 4480 over H.R. 4915 is not set in concrete. The mitigation issue is evolving as new information is made available, such as the new Dames & Moore study on cost-effective hazard reduction approaches. As my testimony before your Subcommittee emphasized, we are anxious to explore various mitigation proposals and possible compromise positions.

(3) The industry's support for earthquake loss mitigation.

There was some concern expressed at the hearing that the insurance industry has "abandoned" the principle of mitigation in the context of the earthquake risk.

The property-casualty insurance industry has pioneered mitigation efforts to save lives and reduce property loss from all types of risks. Our insurer members have, for decades, supported loss mitigation in such hazard areas as workers compensation, automobile injuries, fire, theft, boiler and machinery, and windstorm. Individual company and insurance trade associations have advanced loss avoidance control and mitigation through research, advertising, and legislative lobbying.

The industry has also established several independent organizations to further the mitigation cause. Underwriters Laboratory, for instance, reviews thousands of appliances and other electrical devices for safety and the UL stamp of approval is universally recognized in fire prevention circles. The Insurance Institute for Highway Safety continually monitors highway transportation environments, vehicles and laws and regulations to reduce the carnage on our highways. The National Automobile Theft Bureau tracks stolen vehicles by make and model assisting law enforcement agencies, car makers, and insurance companies in reducing the huge cost of auto thefts to the American public. The National Committee on Property

Insurance, which sponsors the Earthquake Project, works with state FAIR plans and wind pools to promote better land use and construction in the hurricane hazards areas of the country.

With this rich tradition in leading mitigation efforts, it is inconceivable that the insurance industry would abandon mitigation in earthquake insurance. Neither H.R. 4480 nor H.R. 4915 removes the insurance industry from losses associated with earthquakes. In fact, insurance industry potential liabilities for shaking damage losses may actually increase under both bills as the market for earthquake insurance expands. Hence, the insurer's economic self-interest in reducing losses is as clearly present for the earthquake risk as it is for other risks such as auto. For these reasons my testimony emphasized that the property-casualty industry supports the best achievable earthquake loss mitigation measures.

The mitigation objectives of both H.R. 4480 and H.R. 4915 are very similar. The major difference is in the implementation of these measures. H.R. 4915 uses the federal government to impose mitigation on a seismically unaware public. H.R. 4480 attempts to accomplish many of the same mitigation measures as H.R. 4915, but through education and training, economic incentives, encouragement, and financial help to researchers and state and local mitigation entities. H.R. 4480 also recognizes, as does the FEMA study on mitigation by Dames & Moore, that the professional community still has many unanswered questions and the consensus on mitigation issues is still emerging.

(4) Saving lives and property.

It was suggested at the hearing by one witness that enactment of H.R. 4480 will not save "a single life or a single piece of property."

At the outset, it should be understood that the life-saving potential of any homeowners earthquake insurance proposal is not substantial since most seismic fatalities occur in large commercial and public support structures. But to suggest no lives or property can be saved with a residential earthquake insurance/mitigation program is overly simplistic. Mitigation measures can also be focused on critical lifeline facilities as well as schools to maximize life-saving potential.

Effective efforts to save lives and property depend on constructing seismic resistant new homes and retrofitting existing residential structures. Both H.R. 4480 and H.R. 4915 share this objective but have different approaches to achieve the objective. We are concerned that the compulsory approach of H.R. 4915 may not achieve effective mitigation because the general public, given the present state of earthquake awareness, may reject federally imposed standards. Legislative passage may be stalled and mitigation efforts may be set back many years,

perhaps until the next earthquake disaster. The collection of earthquake insurance and reinsurance premiums will be delayed and the country may be ill-prepared financially to cope with the disaster that is sure to come.

The Earthquake Project believes that H.R. 4480 is a more realistic proposal that better attains the mitigation goals. The Swift-Dreier bill, by providing earthquake insurance to all homeowners at actuarial rates that are partially risk-based, allows for quick buildup of a federal fund. This will provide faster and better returns for these homeowners than disaster relief and will reduce the federal liability for disaster relief in the future. An additional small surcharge to the earthquake premium could be used to educate the public as to the dangers posed by earthquakes and how they might mitigate losses. In addition, as the reserve fund grows, additional funds may be available to help finance the cost of earthquake mitigation for those unable to afford it themselves.

We believe that H.R. 4480, by being more palatable to the public, will provide mitigation faster and in the end could save more lives and property than H.R. 4915.

(5) Mitigation incentives.

It was suggested at the July 26 hearing that H.R. 4480 does not contain mitigation provisions and incentives to encourage mitigation steps.

We believe it is important to set the record straight. H.R. 4480 contains meaningful mitigation provisions and incentives. Before outlining these incentives, a few general principles should be understood. First, we believe that reward-based incentives are more effective and enduring than punishment-based incentives.

Second, public support for earthquake hazard mitigation is critical. Without public understanding and support, it would be impossible for elected officials to impose new building codes that would raise the cost of construction throughout the nation by one or two percent. Even more impossible would be requirements to retrofit existing structures to make them "earthquake proof" at costs ranging from two percent for frame dwellings, ten to twenty percent for unreinforced masonry dwellings, and thirty percent to forty percent for engineered buildings.

Finally, given the nature of the earthquake hazard, the task of devising incentives for loss mitigation measures is more difficult than other hazards. The long period between earthquakes -- decades, or even centuries -- the dearth of knowledge of the hazard by the general public, and the lack of consensus among the professionals in the earthquake community make the finding of the right incentives an extremely formidable task.

These general principles are reflected in the mitigation plan of action outlined in section 13 of H.R. 4480. The bill requires the corporation, working in close cooperation with federal, state, and local governments as well as private industry groups, to develop a "practical, cost-effective, and workable" plan for earthquake loss mitigation. At a minimum, the plan must consider the following nine mitigation measures:

(1) national seismic standards for new private construction. A key consideration is whether there should be one code or several, varying by seismic zone.

(2) community-based building codes.

(3) sufficient institutional and staffing support to ensure compliance with building codes. Many large and most small communities have neither the manpower nor the expertise to ensure compliance. This major problem must be dealt with if loss mitigation is to have any meaningful impact.

(4) earthquake strengthening of old structures in high-risk seismic areas. The major issue is whether a comprehensive retrofitting mandate can be cost-effective. Perhaps retrofitting requirements should prioritize critical buildings, such as hospitals, utilities, police, fire, and sheltering facilities, or concentrate on structures with large loss-of-life potential such as apartment, office buildings, and schools. Government grants or low cost loans may also be necessary.

(5) adequate licensing of design professionals. Architects and engineers should have certified proficiency in earthquake proof design.

(6) expanded research and development of new cost-effective building technologies and retrofitting. Many professionals agree that retrofitting existing structures is not cost-effective in many cases. Perhaps new technology can change the cost-effectiveness equation.

(7) education/promotional campaigns to encourage voluntary mitigation. Earthquake public awareness efforts, similar to drunk driving and anti-smoking campaigns, are essential to any successful mitigation program. As outlined in my testimony before your Subcommittee, the insurance industry is already initiating efforts to alert the public to the dangers and encouraging people to take action, such as tieing down water heaters, installing gas shut-off values, anchoring heavy furniture, and protecting breakables.

(8) reward-based fiscal incentives such as lower property tax assessments to encourage the use of state-of-the-art mitigation

technology. One option would be to exclude the additional cost of construction resulting from loss mitigation from the assessed value for property tax purposes. Another option would be federal tax credits for seismic improvements similar to the energy conservation credits.

(9) mandatory, pre-sale earthquake inspections of residential property. This is similar to the termite inspections required in many states. In fact, termite and general home inspectors could also be trained to inspect for cripple walls, walls bolted to the foundation, foundation type, and other items that take only a visual inspection.

This strategic plan would essentially determine which loss mitigation measures are sustainable. The focus should be on cost-effectiveness and marshalling public opinion on the earthquake hazard as part of an overall effort to sell the need for mitigation. The Earthquake Project believes that such a plan is necessary before the government embarks on a hazard mitigation strategy based almost entirely on punishment-based incentives. In addition, most seismic mitigation studies to date have been piecemeal and have involved few of the total number of affected parties.

H.R. 4480 provides eighteen months to complete this strategic model plan before it is submitted to Congress and state and local government for adoption. The plan should include specific goals, timetables, strategies, and tactics for proper implementation.

The Earthquake Project does not support withholding earthquake insurance until the loss mitigation plan is fully implemented at the local level. This would be equivalent to saying that auto insurance would be withheld until there are no more drunk drivers or until all occupants wear seat belts or install passive restraints.

We believe it is unfounded to suggest that providing insurance before mitigation measures are implemented would increase the federal government's liability. Indeed, with the primary program of H.R. 4480 in place, several benefits accrue to the federal government.

First, the federal corporation could collect between $500 and $800 million a year net of expenses, depending on deductibles chosen and the number of states included in the program, to cover earthquake losses for residential properties. This premium income is also the expected average annual earthquake losses for most residential properties. The program is, therefore, actuarially sound in that premium income equals expected loss costs. The liability of the federal government would not be increased to any more extent than any other actuarially sound insurance enterprise. Furthermore, in the event of an earthquake, the need for federal disaster relief would be lessened. This is in contrast to the National Flood Insurance Program where premiums are subsidized. In the NFIP, the

premiums collected have not always been equal to expected losses, and therefore, the program has not always been actuarially sound.

Second, the assessment of a surcharge on the premiums collected can help fund mitigation efforts. Even with a slight surcharge, say two dollars per policy, the federal corporation could collect an additional $130 million per year to be used for mitigation objectives, such as seismic and engineering research, education, promotion, and demonstration projects. Section 13(c)(4) of H.R. 4480 proposes such a self-sustaining mitigation fund.

Third, the insurance policies themselves could be used to provide additional reward-based mitigation incentives. Three examples of such incentives are found in section 13(c) of H.R. 4480:

(1) lower deductible amounts for residential property which meets the recognized community-based seismic building standards. This incentive would apply whether or not the community as a whole has adopted the building code. For example, if the standard deductible is five percent, losses could be adjusted as if the deductible were two-and-half percent, a savings to the homeowner of $2,500 for a $100,000 home suffering a $5,000 loss.

(2) a requirement in the insurance policy that residential property substantially destroyed by an earthquake, if rebuilt, must be rebuilt to state-of-the-art seismic strength standards. This provision would minimize multiple losses to the same property, a problem that has plagued the flood program. The additional costs of the insurance, if any, could also be covered by the insurance policies at a nominal additional premium charge.

(3) lower premiums and/or deductible amounts if residential property passes an earthquake inspection required as a condition of sale and paid for by the seller, as is presently done for termite inspections. The "going in" premium and deductibles for earthquake insurance would assume a "no pass" condition so that the rates would be actuarially sound. Therefore, discounts would be earned as rewards and would not upset the actuarial balance.

By having the insurance plan in place, the government in a few years would have two sizeable funds -- one to pay for earthquake losses and the other to promote mitigation. As an example, assuming no damaging earthquakes occur for five years and an annual accrue interest of seven percent, there would be nearly $4.8 billion in the insurance fund after only five years. This federal fund could pay for about 400,000 homes damaged in a future earthquake if the $12,000 per home average of the Loma Prieta quake is taken as the standard. In addition, if the surcharge is adopted, $650 million would have been collected for mitigation research and education programs.

In summary, putting off the sale of insurance until after mitigation measures are in place does not delay the occurrence of earthquakes. It merely sets back the time when the private insurance industry and the government will be prepared to help its citizens through a crisis period, whether the earthquake is large or small. The Earthquake Project believes it is better to be in a position to help people in need rather than deny them benefits for failing to comply, particularly when few currently understand or see the need for mitigation.

(6) The existing "mandatory" mitigation provisions of the flood insurance program.

There was substantial discussion at the July 26 hearing on whether the existing National Flood Insurance Program (NFIP) is an appropriate model for an earthquake insurance program. Some witnesses supported using the NFIP as a paradigm for an earthquake program because of the mandatory mitigation features of the flood program.

There may have been some confusion, however, on the mitigation provisions of the original flood program versus today's flood program. The original NFIP enacted in 1973 prohibited lenders from making conventional loans to residential properties in flood plains that had not adopted the federal flood mitigation requirements. An amendment in 1977 (the Eagleton amendment) significantly weakened this prohibition and replaced it with a simple notification requirement.

The result is today's NFIP which does not expressly prohibit lenders from making conventional loans on property in special flood hazard areas in non-participating communities. Federal agencies are simply prohibited from guaranteeing these loans and the loans cannot be purchased by a federal agency. The lenders that are making mortgage loans in flood plains of non-participating communities are merely required to notify the borrower that if a disaster is declared, federal disaster assistance is not available.

The original mandatory mitigation provisions of the NFIP, after which Representative Brown's bill (H.R. 4915) is somewhat patterned, have been substantially weakened by Congress. Hence, it is perhaps inappropriate to compare that earthquake insurance bill with the current flood program. It is more accurate to compare the mitigation provisions of H.R. 4915 to the 1973 version of the flood program. Even then, the Brown bill is somewhat more punitive than the NFIP since it prohibits not only federal mortgage loans for non-participating communities but also all federal assistance for acquisition or construction of any publicly or privately owned building.

(7) Cross-subsidization.

There was some discussion at the July 26 hearing that premium-rating structure of the Swift-Dreier bill would require cross-subsidization.

The pricing of H.R. 4480 does not require that certain regions of the country or categories of ratepayer subsidize other regions or ratepayers. On the contrary, the bill mandates risk-based earthquake insurance rates determined by the corporation on the "frequency and severity" of earthquakes with the overall program being actuarially sound. H.R. 4480 provides that rates bear a relationship to the risk assumed. Thus, the earthquake premiums charged to policyholders in Kansas will not subsidize policyholders living in California.

As an overview, it should be understood that some cross-subsidization is inherent in any insurance scheme. For instance, in many social insurance programs (mortgage insurance, FDIC, and social security) all the insureds pay the same premiums regardless of their risk of loss or the losses they actually suffer. This is cross-subsidization in the extreme. On the other hand, most commercial insurance enterprises as well as H.R. 4480 limit cross-subsidization by dividing the policyholders into special risk classifications and charging each class a different rate depending upon the risk.

This conventional risk-based rate-setting, however, does not necessarily eliminate all cross-subsidization. Outside circumstances such as catastrophes (or lack thereof) can cause whole classes of business to experience higher or lower than expected losses over a given time period. For example, Florida coastal residents pay a high rate for windstorm coverage. In periods of low hurricane activity, the coastal areas actual windstorm loss experience might be better than that of inland U.S. areas. This does not, nevertheless, mean that the classification system is unfair or actuarially unsound.

Earthquake insurance poses uniquely significant uncertainties to the rate maker, because of the peculiar nature of the earthquake risk. Since earthquakes occur at irregular intervals, calculating the recurrence rates is highly uncertain. The recurrence rate of damaging earthquakes at a particular location is measured in decades, even for smaller sized quakes. Recurrence rates for catastrophic earthquakes are measured in centuries. Historical records are only 200 - 300 years in the United States, a very short period in geological time. Experts do not agree on the methods of calculating recurrence rates, let alone the rates themselves.

In addition to the inability to determine accurate recurrence rates, experts also disagree on the loss of lives and property damage following a major earthquake. Estimates of total mortality, morbidity, and property damage may differ by a factor of two or more. Experts even disagree on

the damage that will occur to a particular structure with known architectural features.

In short, the multitude of variables and the diversity of expert opinion on these variables requires estimates of earthquake insurance rates for individual risks, individual communities, or, in some cases whole regions. The potential errors of estimates overwhelm any attempt at precision. Accordingly, any attempt to eliminate all cross-subsidization among policyholders in a federal earthquake program is impossible, given the knowledge base and the state-of-the-art in earthquake prediction and the modelling of damages.

This is not to say, however, that earthquake insurance should be "flat-rated", i.e., every property owner should pay the same premium. Despite the uncertainties, cross-subsidization can be minimized by employing classification systems that differentiate rates based on broad principles. For example, rating classifications can be adopted in a federal earthquake insurance system for small residential structures (one-to-four family) and manufactured homes.

At the outset, the total premium for all residences to be included in the program should be estimated. If, for example, nearly all of the nation's 65 million homes were to be included and if the average annual loss to these homes from seismic shaking damage were estimated at $800 million, then the average yearly loss cost per dwelling excluding administrative expenses and, without regard to a classification system, would be $12.31. But instead of charging every homeowner a flat premium of $12.31 per year, it would be more equitable to assess different rates depending on the "frequency and severity" of earthquakes in the homeowner's region (as suggested in section 9(b) of H.R. 4480). With this approach, homeowners in California would pay rates several times the average and people in Iowa would pay a fraction of the average.

The Earthquake Project has developed a computer model which we believe illustrates the feasibility of setting risk-based earthquake insurance premiums. The model attempts to estimate expected losses by seismic zone, which were determined using state boundaries since the state is the unit of pricing used for most other insurance coverages. Within each zone, individual fault lines were identified and an interactive computer model shook the inventory of residential properties taken from the U.S. census of housing for the various sizes of earthquakes that could be expected on that fault line. The epicenter of the earthquakes was moved along the fault line and damage equations based on distance from the fault line and size of the quake were used to calculate the average damage by zip code.

The value of the homes for the computer model was taken as the average amount of insurance for the homeowners line of insurance for a

large and representative insurance company. The damage equations were varied by fault lines using attenuation formulas and were different for "brick" and frame" dwellings. This procedure could only be used in areas of known fault lines and consequently many areas of the eastern U.S. were assigned "minimum" premiums.

Developing this computer model was designed to test the feasibility of the proposed federal earthquake insurance plan and was not an attempt to arrive at final premium charges for individual risks. The corporation in H.R. 4480 would set the final rates and will likely consider other models and other factors not in the present model. For instance, loss mitigation efforts by states, local communities, and/or homeowners may be rewarded by a discount in policyholder's premium or deductible. Premiums may also vary according to the type of materials used in the structure, the insured value of the structure, or other such rating factors. Finally, the corporate may also wish to establish subsections within each zone to reflect varying risks within the state zones.

In summary, H.R. 4480 attempts to minimize cross-subsidization by mandating, to the extent feasible, risk-based earthquake insurance rates for policyholders. The overall rates are also "actuarial" because the total amount collected by the federal corporation would be equal to the expected losses and the rates would not be subsidized by the federal government as they have been in the flood program.

Finally, Mr. Chairman, we thank you again for the opportunity to testify before your Subcommittee at the July 26 hearing and for allowing us to submit this supplemental correspondence to help clarify the hearing record.

We look forward to working with you, other Subcommittee members, and staff in developing constructive federal earthquake insurance and hazard mitigation legislation in the next Congress.

Sincerely,

Franklin W. Nutter
Chairman

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